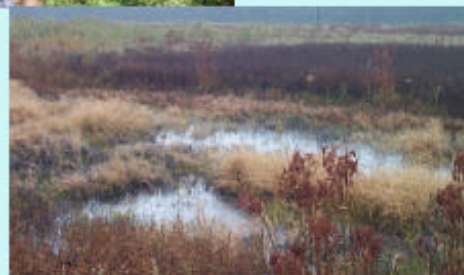
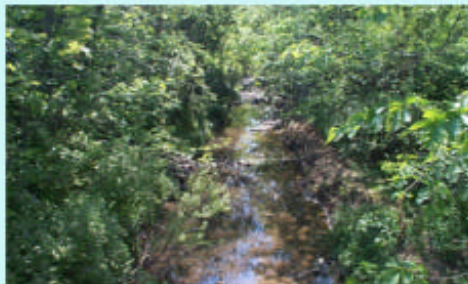


Maryland



2002 Annual Report



Coastal Zone Management Division
Chesapeake & Coastal Watershed Services
Maryland Department Of Natural Resources
Annapolis, MD

May 2003



Robert L. Ehrlich, Jr
Governor

Michael S. Steele
Lt. Governor

A message to Maryland's Citizens:

The Maryland Department of Natural Resources (DNR) seeks to preserve, protect and enhance the living resources of the state. Working in partnership with the citizens of Maryland, this worthwhile goal will become a reality. This publication provides information that will increase your understanding of how DNR strives to reach that goal through its many diverse programs.

C. Ronald Franks
Secretary

W.P. Jenson
Deputy Secretary

The Facilities and services of the Maryland Department of Natural Resources are available to all without regards to race, color, religion, sex, sexual orientation, age, national origin or physical or mental ability.



Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue, Annapolis, Maryland 21401
Toll Free in Maryland: 1-(877)-620-8DNR EXT 8730
Out of State call: 410-260-8730
www.dnr.state.md.us

Publication Date: May 2003



PRINTED ON RECYCLED PAPER

2002 Nonpoint Source Program Annual Report

Table of Contents

Executive Summary.....	3
Mission and Goals of Maryland’s Nonpoint Source Program.....	4
Nonpoint Source Program Overview.....	5
Challenges.....	5
Priorities and the Project Selection Process.....	7
Program Benefits.....	9
2002 Watershed Implementation Projects Benefits.....	10
Accomplishments.....	17
• Continued Integration of Multi-objective Watershed Management Planning	
• Maryland Watershed Management Planning Strategy Development	
• Watershed Restoration Action Strategy Program Refinement	
• Nonpoint Source Total Maximum Daily Loads: Implementation and Linkages	
• Increase in Nonpoint Source Program Visibility	
• Coastal Nonpoint Program Implementation Work Groups	
• Onsite Sewage Disposal System Management Initiatives	
• Agricultural Programs	
• Nonpoint Source Program Work Group Participation	
• Progress in Related Programs: Clean Marinas, Tributary Strategies, Maryland Biological Stream Survey, Stream Waders Program	
Ongoing and Future Efforts.....	32
<u>Appendices</u>	
A. Financial Information	
B. Maryland’s Preliminary Chesapeake Bay Nutrient Caps	
C. Chesapeake Bay Tributary BMP Implementation Tracking Totals	
D. 2002 Outreach Strategy	
E. Matrix of Progress on Nonpoint Source Management Plan Milestones	

Copies of this report are also available on the Nonpoint Source Program Website at:

<http://www.dnr.state.md.us/bay/czm/nps>

Published and distributed by the

Nonpoint Source Program
Chesapeake and Coastal Watershed Service
Maryland Department of Natural Resources
Tawes State Office Bldg., E-2
Annapolis, MD 21401

Phone: 410-260-8741

Fax: 410-260-8739

Gwynne Schultz
Director, Coastal Zone Management Division

Nonpoint Source Program Staff:

Katharine Dowell, Nonpoint Source Program Manager
Louise Hanson, Coastal Nonpoint Program Coordinator
Danielle Lucid, Watershed Strategies Program Manager
Kenneth Sloate, Nonpoint Source Program Planner
Didian Tsongwain, Grants Manager/ Outreach Coordinator



Maryland's Nonpoint Source Program is funded in part by a Section 319 Clean Water Act Grant from the U.S.EPA. Although this Program is funded partly by U.S EPA, the contents of this report do not necessarily reflect the opinion or position of the EPA.

Executive Summary

The Maryland Nonpoint Source (NPS) Program plays a lead role in helping to achieve protection and improvement of Maryland's water quality by promoting and funding state and local watershed planning efforts, water quality monitoring, stream and wetland restoration, education/outreach, and other measures to reduce and track nonpoint source pollution loads.

The NPS Program is not only an implementer, but a facilitator and energizer, even when the implementation of projects is ultimately funded to a large extent by other state, local or federal agencies. Thus, the assessment, monitoring, and planning provided by § 319 funds allows Maryland to integrate and coordinate multiple nonpoint source control efforts with multiple partners.

In the past year, the NPS Program has had some notable program accomplishments and successes. Progress was made in implementing best management practices in all nonpoint source areas through the provision of technical assistance, project funding or both. For a list of recent projects, see <http://www.dnr.state.md.us/bay/czm/nps/projects/projectsy.html>.

Highlighted 2002 programmatic efforts include:

- Continued Integration of Multi-objective Watershed Management Planning
- Maryland Watershed Management Planning Strategy Development
- Watershed Restoration Action Strategy Program Refinement
- Nonpoint Source Total Maximum Daily Loads: Implementation and Linkages
- Increase in Nonpoint Source Program Visibility
- Coastal Nonpoint Program Implementation Work Groups
- Onsite Sewage Disposal System Management Initiatives
- Agricultural Programs
- Nonpoint Source Program Work Group Participation
- Progress in Related Programs: Clean Marinas, Tributary Strategies, Maryland Biological Stream Survey, Stream Waders Program.

The Nonpoint Source Program works to ensure that Maryland continues to fulfill the program requirements of both the § 319 Nonpoint Source Program (Clean Water Act) and the 6217 Coastal Nonpoint Program (Coastal Zone Act Reauthorization Amendments). The Program will continue to administer the federal grants and strive for efficiency and integration of related water programs, as well as accountability in allocation of funds, including improved documentation of project benefits and accomplishments. In addition, the Program will continue to lead efforts to create comprehensive watershed plans across the state to help address the impacts of nonpoint source runoff, and to facilitate and/or track the implementation of nonpoint source and watershed planning-related Chesapeake Bay and Coastal Bays Management Plan commitments. These efforts will be accomplished by continuing to leverage and work with other governmental and nongovernmental partnerships, and supporting new nonpoint source control initiatives and partnerships as they arise.

Mission and Goals of Maryland's Nonpoint Source Program

The extensive tidal waters of the Chesapeake and Coastal Bays, Maryland's freshwater streams and the Atlantic Ocean are vital to the culture and economy of Maryland. When Captain John Smith first sailed up the Chesapeake Bay four centuries ago to the present site of the Bay Bridge, he was awed by the verdant landscape along its shores, of which he wrote: "Heaven and earth never agreed better to frame a place for man's habitation."

Today, that landscape looks very different, and Maryland's rich heritage and the bounty of its waters are threatened by the very prosperity that continues to draw newcomers. Recreation, tourism, commercial and recreational fishing, wildlife habitats, and our quality of life are ultimately dependant upon healthy watersheds. Yet, the state's waters are increasingly impacted by and remain impaired due largely to nonpoint sources of pollution and related habitat degradation due to altered land uses.

The Maryland Nonpoint Source (NPS or § 319) Program is working to address these problems by playing a lead role in promoting and funding state and local watershed planning efforts, water quality monitoring, stream and wetland restoration, education/outreach, and other measures to reduce and track nonpoint source pollution loads.

Full participation of a number of partners is essential for successful restoration and protection efforts. The NPS Program is key in promoting partnerships and inter- and intra-governmental coordination to reduce nonpoint sources of pollution, and helping bring both the necessary technical and financial resources to local watershed management planning, continued implementation of best management practices, and restoration of streams and wetland habitats. These partners include State and local government, Soil Conservation Districts, private landowners and watershed associations, among others.

The NPS Program's three primary goals are:

- Reducing nonpoint source pollution;
- Restoring and protecting habitat (e.g., streams, riparian buffers and wetlands); and
- Enhancing watershed management planning and implementation to help achieve Maryland's watershed protection and restoration objectives.

Maryland Department of Natural Resources (DNR) is the lead agency responsible for coordination of NPS Program policies, funds, and cooperative agreements with state agencies and local governments. Several other state agencies have key responsibilities, including the Departments of Environment (MDE), Agriculture (MDA), Planning (MDP), and State Highway Administration (SHA).

The NPS Program is housed within DNR's Coastal Zone Management Division, a part of Chesapeake Bay & Coastal Watershed Service (CCWS). The Nonpoint Source Program supports CCWS's mission to:

- **Provide** Coordinated Guidance on Watershed Restoration and Bay Stewardship
- **Improve** Data Collection, Assessment and Monitoring

- **Strengthen** Watershed/Ecosystem Management through Sound Science and Economic Principles
- **Assist** Local Governments with Managing Natural Resources and Guiding Growth
- **Educate** the Public on Bay and Watershed Values and Protection
- **Expand** Community and Individual Support and Involvement

Nonpoint Source Program Overview

The allocation of § 319 Clean Water Act funds and the Coastal Nonpoint Pollution Control Program funds under section 6217 is coordinated by the Department of Natural Resources' Coastal Zone Management Division. The funds are used primarily for direct implementation (80% of funds for in-the-ground improvements) and secondarily, program management, planning and technical assistance. The Coastal Nonpoint Source funds are directed currently within the coastal zone (comprising 66% of Maryland's area) to address local septic system management, fund clean marina programs, and measure nonpoint source successes. The Division ensures that the projects funded under each grant authority are complimentary and well-coordinated. These two funding sources provide only a small (but necessary) amount of the funds that are currently used by Maryland to protect and restore water quality from the impacts of nonpoint source pollution (Appendix A: Nonpoint Source Program Financial Information).

Challenges

The NPS Program's role in coordinating and funding local and statewide nonpoint source control efforts is fundamental and continues to increase in importance. As the health of Maryland's watersheds continues to be both degraded and threatened from nonpoint source pollution and habitat destruction, additional efforts are being made to link ambient monitoring information with watershed conditions in each major basin to provide better guidance for management. Reporting of monitoring results has become more "diagnostic" -- revealing the causes of problems, so that management solutions are more apparent. New technologies for measurement and data analysis are providing much more comprehensive spatial and temporal coverage than was possible in the past, allowing important connections to be made between data and ambient conditions for living resources, particularly in shallow-water habitats. New technologies are also providing opportunities to increasingly connect interested citizens, students, researchers and managers with near real-time monitoring information (Eyes on the Bay <http://mddnr.chesapeakebay.net/eyesonthebay/index.cfm>), raising awareness and hopefully support for meeting the challenge to protect and restore Maryland's waters.

Demand for the Nonpoint Source Program's ability to provide services and financial assistance is increasing due to the growing need for comprehensive watershed assessment and planning. Watershed planning efficiently integrates multiple natural and water resource objectives, as well as helps prioritize and document the need for project funding. The NPS program helps local governments address the twin constraints of limited staffing and funding levels and thereby leverages both their voluntary and regulatory efforts to reduce nonpoint source pollution and maximize environmental and natural resource benefits. The outstanding need for implementation of nonpoint source best management practices -- such as stream and wetland restoration -- led this year to an excess of \$4 million worth of project proposals competing for just over \$1 million in available 2003 project funds.

With many important goals to achieve, and in the face of unprecedented state and local budgetary constraints, the Program's federal funding and state and local partnerships will be pivotal in helping Maryland achieve the *Chesapeake 2000* Agreement and the Coastal Bays Management Plan goals, as well as ultimately in helping remove the Chesapeake Bay and other smaller watersheds from the List of Impaired Waters.

Key challenges addressed by the NPS Program in collaboration with other state efforts include:

1. Trends in **nutrient and sediment pollution** are closely watched as these continue to be the foremost threats to the state's living resource habitats. In particular, reducing nutrient pollution in tidal waters remains one of the central challenges in restoring Chesapeake and Coastal Bay waters. As watersheds are deforested and developed, the discharge of nutrients from streams and overland flows has generally increased. Although findings of the Chesapeake Bay Monitoring Program show significant declines to date in nutrient concentrations, particularly in areas dominated by wastewater treatment plants where nutrient discharges have been significantly reduced, habitat conditions still remain largely unchanged in most areas and continue to be addressed through stream and wetland restoration and related efforts.
 - **Nutrient pollution** loads are increasing, especially from urban and suburban sources which are growing faster than any other nutrient source impacting the Chesapeake Bay – despite the use of traditional best management practices (BMPs). To address the gap between the effectiveness of traditional BMPs and increasing need for reducing nutrients loadings and hydraulic loads in stream channels, the employment of newer techniques of environmental design (low impact development, rain gardens, innovative stormwater retrofits, etc.) will need to increase.
 - Focus on the need to reduce **sediment** pollution has increased. Sediment loading has close associations with land use, stream channel hydraulics, quality of aquatic habitat, impacts on drinking water supplies, and the movement of attached pollutants. In addition to implementation of BMPs and stream restoration projects, both research and model validation for sediment loading are underway.
 - **Urban non-point source pollution** (including not only nutrients and sediment, but also metals, pesticides, hydrocarbons, etc.) is the fastest growing source of pollution to the Chesapeake Bay, responsible for fouling nearly 1,600 miles of streams and destroying thousands of acres of habitat for crabs, fish and other aquatic life. The State's population grows by nearly 1,000 residents every week, but it is the *pattern of development*, rather than the pace of growth, that is causing water quality and other problems. From the tidal marshes of the Eastern Shore to the Appalachian Mountains out West, from rural hamlets to metropolitan Baltimore, Maryland is suffering from the harmful impacts of development and urban sprawl.

Over the past 50 years, as the State's population more than doubled to 5.3 million, people started moving farther and farther from established communities. In the last three decades alone, Maryland's population increased by 37%, while the amount of land developed to accommodate these people grew more than three times as fast, by

124 %. The resulting pavement crisscrossing the Bay watershed carries more pollution into this once thriving estuary. In one year, runoff from streets, roofs and parking lots contributes 442,000 tons of sand, mud and grit, nearly 3 million pounds of phosphorus and 28.2 million pounds of nitrogen into the Chesapeake Bay watershed. In addition to pollutant loads, and aquatic habitat impacts, conventional development and management practices are contributing to declining groundwater levels which are not only important for human use but also significant for aquatic ecosystems.

2. **Physical habitat degradation** continues as the most widespread source of stress on fish and other aquatic life, degrading more miles of streams than water quality problems. Physical damage to stream habitats is particularly associated with land use changes which can alter a stream's hydraulics, increasing erosion and the transport of instream pollution. Currently, stream and wetland habitat restoration needs dwarf the funds available from *all* sources.
3. There is major focus on the need to quantify the impact of **onsite sewage disposal systems inputs** to surface waters through water quality monitoring and the use of innovative methods to detect sewage pathogens and nitrogen inputs.
4. Emphasis is emerging on the quality of Chesapeake Bay near-shore **shallow water habitats**, and **shore erosion control**. A partnership is underway with 2 counties to pilot the Shore Erosion Task Force recommendation to develop a tool that targets the placement of appropriate shoreline response efforts (from structural to land management).
5. As environmental managers, local governments are now faced with both shrinking local revenues and state aid, and must rely increasingly on grant sources to fund projects. The NPS Program is working to address their increasing local watershed planning and restoration **funding needs** to meet regulatory and environmental objectives.
6. Finally, there is increasing focus on linkage of § 319 funds with watershed implementation under the Total Maximum Daily Load (**TMDL**) program – which sets limits on allowable pollutants to meet water quality standards.

Priorities and the Project Selection Process

The § 319 funds are used throughout the state primarily for direct implementation of watershed plans and nonpoint source control projects, and secondarily for program management, planning and technical assistance. Projects include, but are not limited to: stream restorations, wetland creation, oyster habitat restoration, cover crop applications, clean marinas, septic management strategies, stormwater retrofits, etc.

Program projects are selected through an interagency process. A request for proposals is distributed to representatives on the NPS Program's comprehensive mailing list and posted on DNRs' web page. Once the deadline is reached and all proposals are received, they are distributed to the NPS Steering Committee for review and ranking. The review committee includes representatives from the Department of Natural Resources, Department of Agriculture, Department of the Environment,

Department of Planning, University of Maryland, Maryland's Coastal and Watershed Resource Advisory Committee, Maryland Tributary Teams, and other organizations.

Evaluative criteria reflecting both federal funding and state priorities during the most recent interagency process to select program projects included:

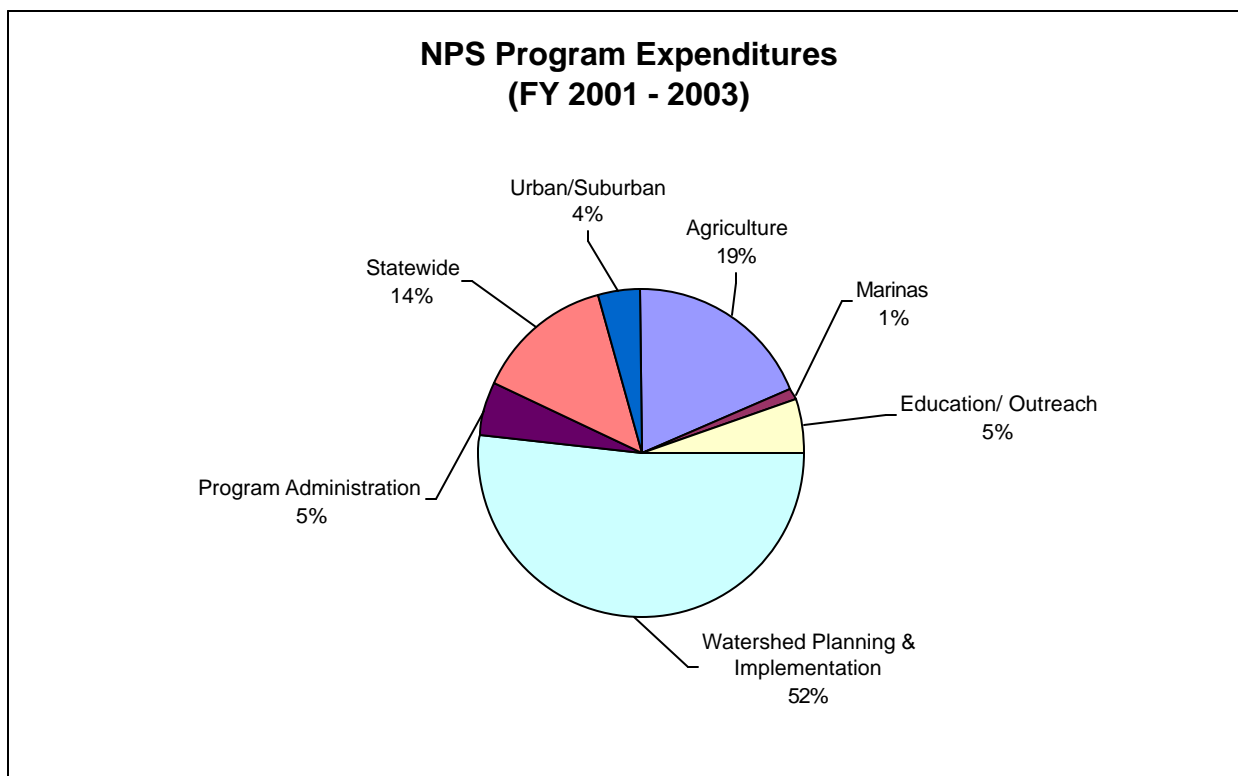
- ✓ **First priority** will be given to those projects that have a direct relationship to drafted or completed watershed plans incorporating a draft or final TMDL.
- ✓ **Second priority** will be given to those projects that have a direct relationship to drafted or completed watershed plans but that do not have a direct relationship to EPA approved nonpoint source TMDL or a TMDL scheduled for development as of July 2002.
- ✓ Projects have multiple objectives: e.g., maximize water quality, habitat protection and restoration, and other natural resource goals;
- ✓ Are located in a watershed on Maryland's draft 2002 303(d) list (list of impaired waters);
- ✓ Are located in a Priority Category One or a Select Category Three watershed as identified in Maryland's Unified Watershed Assessment. Extra consideration will be given to projects located in priority category one and select category three watersheds;
- ✓ Address other locally defined geographic priorities at smaller scales than the 138 watersheds evaluated in the Unified Watershed Assessment;
- ✓ Uses Coastal Zone Act Reauthorization Amendment (CZARA) – Section 6217 management measures;
- ✓ Addresses an issue of statewide concern or emphasis such as: habitat goals for wetlands, siting and operation of septic systems, acid mine drainage, growth management, sustainable agriculture, etc.;
- ✓ Consistent with the principles of smart growth;
- ✓ Evidence of partnering with Chesapeake Bay Program Tributary Teams or the Maryland Coastal Bays Program (if appropriate); and
- ✓ Leverages other sources of federal, state, local or private funds (e.g. EQIP, SRF, local, businesses, etc.)

After completing an evaluation and ranking of the projects, interagency group recommendations are forwarded to the Bay Workgroup. Upon Bay Workgroup review, all recommended projects are submitted to the USEPA which finally approves all Maryland nonpoint source implementation projects.

Program Benefits

Over the last five years, the program has funded a broad range of projects designed to control and prevent nonpoint source pollution in Maryland. Wetlands have been created, streams have been restored, agricultural landowners have installed a variety of best management practices and demonstration projects have shown the positive effect of innovative practices (e.g. low impact development). A map that portrays the location of recently funded watershed implementation projects, and summaries of their benefits appear below. Additional information about individual projects funded over the last five years is summarized in this report and may be accessed through the nonpoint source program website <http://www.dnr.state.md.us/bay/czm/nps/projects/projectsy.html>

Program expenditures generally fall into six broad categories: watershed planning and implementation, agriculture, marinas, urban/suburban, program administration, education/outreach, and statewide activities. Over just the last three grant years, the State of Maryland has received a total of over \$9 million dollars from the United States Environmental Protection Agency under CWA § 319 to control and prevent nonpoint source pollution. The state has matched these federal funds by spending over \$6 million dollars. Program expenditure categories are summarized in the pie chart below.



However, simple analysis of program expenditures obscures a key function of the NPS Program: that is, its role as a facilitator or project catalyst where the implementation of projects is ultimately funded to a large extent by private or other state, local, private or federal agency funds. This ability of NPS funds to leverage other funds and project partners is due to the program's assessment, monitoring, and planning capability, which allows state agencies and local governments to integrate, prioritize, and coordinate various multiple nonpoint source control efforts and tap into funding and other resources from private as well as governmental entities.

In Maryland, the development of watershed assessments and plans is provided by both NPS funds and funds from NOAA's coastal zone management program award. These resultant watershed plans help target the implementation of best management practices to more efficiently meet multiple environmental and natural resource objectives. At a time when federal and now state funding has remained level or is even potentially decreasing for nonpoint source pollution prevention and control,

the seed money from the § 319 program has made it possible for the relative percentage of best management practice funding from other sources (local and nonprofit) to actually increase.

This leveragability of § 319 funding dollars can be phenomenal, up to 60 to 1. In the last 10 years, for example, in the Sawmill Creek watershed, Maryland invested about \$500,000 in § 319 money for assessment and targeting. This initial money has been leveraged over time to \$30 million in local and state projects, i.e., sixty dollars in projects resulted for every § 319 dollar. The additional benefit to the use of § 319 funding is the leveraging of citizen and nonprofit organization participation. Groups such as the Alliance for the Chesapeake Bay, Save Our Streams, as well as citizen associations, watershed associations, Scout groups, Tributary Teams, etc., have all assisted with monitoring, education (storm drain painting, workshops) and restoration activities (fish stockings, tree plantings) in various watersheds.

2002 Watershed Implementation Project Benefits

During any given calendar year, the NPS Program funds a number of watershed implementation projects. In this program, projects from overlapping grant years occur in any given calendar year, i.e., some projects are ongoing from previous years, some are ending, some are proposed or just beginning. The following is a snapshot of highlighted environmental benefits from *calendar year* 2002 Watershed Implementation Projects, followed by a locational map. For a more complete picture of ongoing and completed projects, see Appendix D, and/or visit

<http://www.dnr.state.md.us/bay/czm/nps/projects/projectsy.html>

Multi-year Projects

- **Neff Run Restoration Phase I & II** - A priority of the Neff Run Watershed Management Plan, the Neff Run Phase I stream restoration project stabilized severe stream instability problems in the middle and upper reaches of the Neff Run watershed, a subwatershed of Georges Creek. During Phase I, nearly 4,000 linear feet of stream was stabilized. It is estimated that the Phase I project will reduce sediment erosion by 1,795 tons. In addition to stream stabilization work, a major fish blockage was removed. Phase II stream restoration will occur on approximately 800 linear feet on two major tributaries, Matthew's Run and Dan's Rock Run, entering into Neff Run, as well as additional areas immediately downstream of the completed Phase I project.
- **Western Maryland Cover Crop** - This multi-year project seeks to improve water quality in the Upper and Lower Monocacy, Antietam and Catocin Creek Watershed basins by the installation of seasonal cover crops on cropland. Cover crops have long been recognized as one of the most effective practices to reduce nitrate-leaching losses. Over two grant years, the project seeks to enroll approximately 14,700 acres of cover crops. Based upon Chesapeake Bay Program and Maryland Tributary Strategies, the efficiency of this practice is estimated at 118,048 lbs. for nitrogen and 3,042 lbs. for phosphorus.

2002 Grant Projects

- **Neff Run Leach Beds** – The Neff Run Leach Bed project complements the Neff Run Phase I & II restoration project. The construction of five limestone application sites and the four leach beds is expected to reduce the acid load in Neff Run, Matthew Run and ultimately Georges Creek by more than 1,300 pounds per day. This is expected to improve ¼ mile of Matthew Run, 2½ miles of Neff Run and is expected to show improvement in 1 mile of Georges Creek below its confluence with Neff Run.
- **Georges Creek Outreach** - This project will develop and distribute a watershed survey and watershed education materials for local residents. A series of public meetings will be held to discuss aspects of the Georges Creek Watershed Restoration Action Strategy (WRAS) Planning Initiative. Two Watershed Activities to Encourage Restoration (WATER) days will be held for middle and high school students located within the Georges Creek watershed.
- **Little Patuxent Forest Buffer**– This project will implement the Little Patuxent Watershed Restoration Action Strategy by restoring approximately 11.5 acres of riparian forest buffers on public land. Nutrient reduction estimates will be provided upon project completion. Private riparian property owners will receive educational materials that will explain the value of riparian buffers and encourage their restoration and enhancement on private properties.
- **Franklin Square Stream Restoration**– This project will restore approximately 2,600 linear feet of stream. Sediment and nutrient reductions will be estimated upon project completion. Following construction a three-year minimum monitoring program will be conducted to measure the effectiveness of the project. This project helps implement the Bird River Watershed Water Quality Management Plan.
- **Isle of Wight Wetland Restorations** - This project will help implement both the Isle of Wight Watershed Restoration Action Plan, and TMDL, and restore 30 to 80 acres of wetlands and wetland buffers to achieve water quality and habitat benefits in the Isle of Wight Bay watershed. Nutrient load reductions will be estimated upon project completion.
- **Ocean City Stormwater Retrofit** – This project helps implement the Comprehensive Conservation Management Plan for the Maryland Coastal Bays and will lead to the development of a retrofit program for the storm drainage system for the Town of Ocean City. The project will also implement a pilot project with final design and construction of retrofits for the storm drainage system.
- **Carroll Creek Restoration** – This stream restoration project will help implement the Rock and Carroll Creek Forestry Master Plan. A variety of structural and innovative, non-structural, bioengineering techniques to stabilize eroding banks and to improve riparian and in-stream habitat along 3,330 feet of Carroll Creek stream bank will be put in place. Sediment reductions will be estimated upon project completion.

2001 Grant Projects

- **Lower Monocacy Riparian Restoration** – This project addressed the need for riparian restoration and permanent land protection in the Lower Monocacy River Watershed, as identified in the Monocacy Scenic River Watershed Management Plan. The Potomac Conservancy, working in partnership with the Carrollton Manor Land Trust, set out to guide a community-led effort to educate 130 landowners and key local professionals in a rural (but quickly-developing community) about the opportunities for riparian restoration and permanent land protection. Over 300 acres of land along creeks or the mainstem of the Monocacy river are under negotiation for permanent protection, with an additional 7,209 acres under consideration for permanent protection through Carrollton Manor land trust's Rural Legacy application.
- **Upper Rock Creek Restoration** – This project has been identified as a top priority in the Rock Creek Watershed Restoration Study. The project will restore approximately one mile of stream to a good biological and habitat resource condition as defined in the Montgomery County Stream Protection Strategy. Pre- and post biological monitoring will be conducted to evaluate project effectiveness. Educational materials will be distributed to local residents promoting native landscapes, riparian buffers, lawn reduction and yard trimming management.
- **Town Creek Restoration** – This stream enhancement project consisted of the restoration and stabilization of 3,300 linear feet of stream that flows through the Town of University Park. The enhancement of this stream will improve water quality by preventing sediment runoff and serving as a natural filter to capture pollution before it enters the Anacostia River.
- **Ditch Maintenance BMP Demonstration** – The Comprehensive Conservation and Management Plan for the Coastal Bays identifies the need for proper maintenance of roadside ditches for water quality purposes. This project addresses this need by seeking to reduce groundwater contamination from roadside ditches by development and implementation of guidelines for Worcester County ditch maintenance. Ditch maintenance guidelines are currently under development. A demonstration project that employs the new guidelines will also be implemented.

Proposed 2003 Grant Projects

- **Carroll Creek Restoration** – This project seeks to implement the recommendations of the Rock and Carroll Creek Forestry Master Plan and the Carroll Creek Stream Corridor Assessment. Located in Frederick County, this project will restore 2,880 linear feet of stream, and reforest approximately 24 acres that includes 15 acres of riparian buffer and creation of three acres of non-tidal wetland. Volunteer hands-on restoration training will help vegetate approximately 4 acres of riparian forest buffer. Measurable environmental results equal approximately 724 cubic yards of soil that will be removed from actual and potential stream transport. A long-term monitoring program will be conducted by Hood College.

Carroll Creek



- **Liberty Reservoir Targeted Watershed** – The project seeks to implement the Watershed Restoration Action Strategy for Liberty Reservoir. The objective is to enroll five farms for best management practice (bmp) implementation, install a minimum of 12 practices on these farms, install 26 acres under the Conservation Reserve Enhancement Program and signup 800 acres in cover crop.
- **Wootton Mills Park Restoration** – This high-priority project in Rockville, identified in the Watts Branch Watershed Study and Management Plan, will restore approximately 4,000 linear feet of stream, restore a 250 riparian stream buffer, enhance existing wetlands to create 1.7 acres of wetland and upgrade existing storm drain outfalls
- **Lower Hawlings Restoration** – This project will implement the recommendations outlined in the Comprehensive Management Planning Study for the Patuxent Reservoir Watershed and it has been identified as top priority in the Hawlings River Watershed Restoration Study. This project will improve in-stream and terrestrial habitat on county parkland and reduce sediments and associated pollutants from being carried downstream to the Rocky Gorge drinking water supply reservoir through extensive bank and channel erosion. The project will restore 2,880 linear feet of stream channel and reforest riparian buffers where appropriate. Implementation of this project will result in an estimated sediment load reductions of 120 tons per year. There will be pre-and post-restoration stream biological, quantitative physical habitat, and rapid habitat assessments. A citizen volunteer component will ensure enhanced riparian reforestation and also provide for routine management of invasive plants to assure survival of project plantings through a “Weed Warrior” program (for more information see http://www.mc-mncppc.org/Environment/weed_warriors/intro.shtm).
- **Cherry Creek Restoration** – This project, identified in the Cherry Creek Watershed Study, will use a comprehensive system of best management practices to protect and enhance riparian and aquatic habitat in the Cherry Creek, as well as reduce stream bank erosion and associated pollutants that may be carried downstream to the Rocky Gorge Reservoir. The project will

stabilize 285 linear feet of stream by using bioengineering techniques such as installing plant material, seeding, live staking, mulching, and vegetated geo-grids. After implementation, an estimated 31.2 tons per year of sediments being carried downstream will be halted. Community participation, an integral part of this project, will be achieved through local schools' involvement in education and outreach projects through the Green School Mentoring Program.

- **Woodvalley Stream Restoration** – The Woodvalley stream restoration project in Baltimore City will cover 2,750 linear feet of channel including the mainstem and two tributaries. Sediment and nutrient reductions will be substantial and will be estimated upon project completion. Following construction, a three-year minimum monitoring program will be conducted to measure the effectiveness of the project. This subwatershed project will help implement the Jones Falls Watershed Water Quality Management Plan.

Woodvalley Streambank Erosion

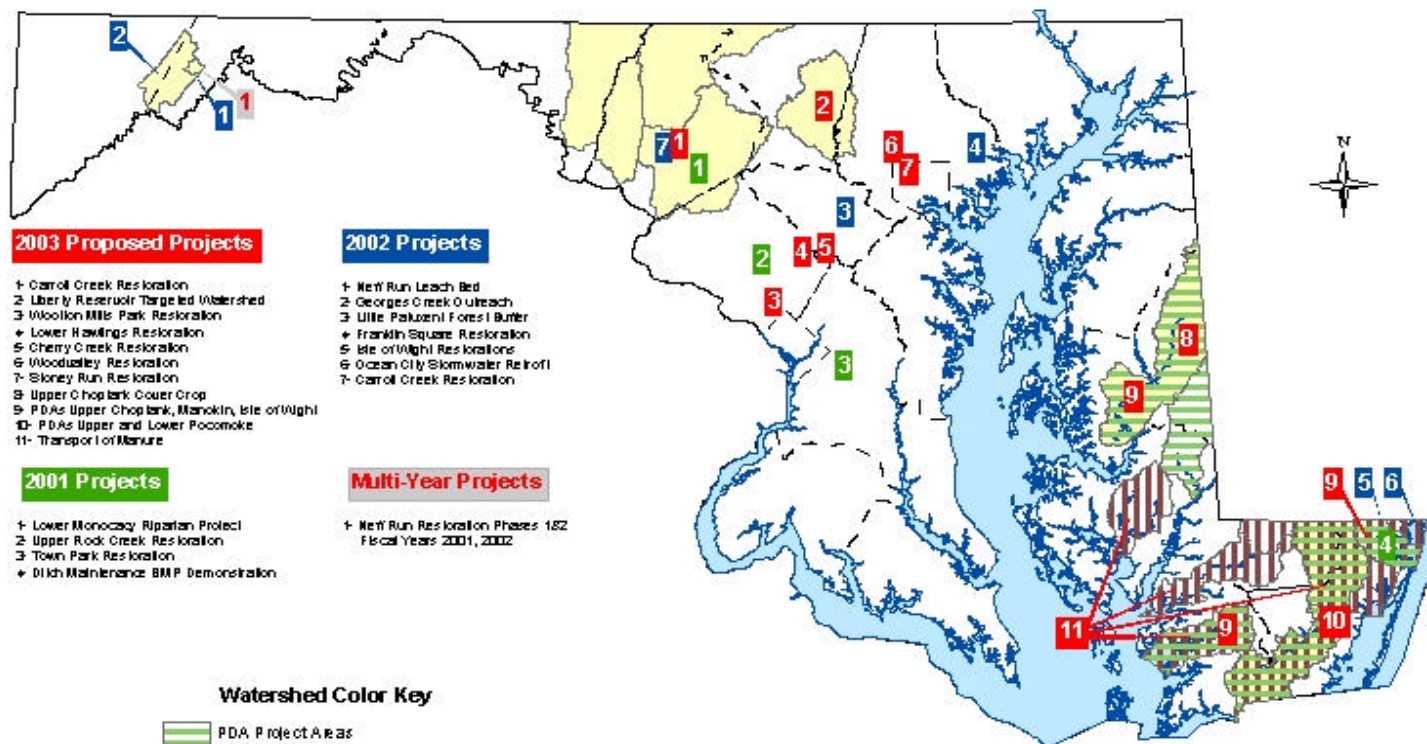


- **Stony Run Restoration** – The Stony Run stream restoration project in Baltimore County will restore 2,300 linear feet of stream channel and construct four water quality wetlands. The project will quantify sediment reductions, and will include biological and chemical monitoring. The project will monitor the effects of the completed stream restoration on channel stability by establishing permanent cross-sections at several stream sections. This project is identified as high priority in the Stony Run Watershed Restoration Plan and the Stony Run Stream Stabilization study.
- **Upper Choptank Cover Crop** - The development and implementation of a cover crop program has been identified as a key goal of the Upper Choptank Watershed Restoration Action Strategy. The proposed cover crop program will target 5,525 acres under management. Based upon Chesapeake Bay Program and Maryland’s Tributary Strategies the efficiency of this practice is estimated at 43,000 lbs. for nitrogen and 1,050 lbs. for phosphorus.
- **Public Drainage Associations (PDAs) : Upper Choptank, Manokin, Isle of Wight** – This project will implement two management projects on Public Drainage Associations (PDAs) by demonstrating the weed wiper technology in targeted watersheds. The proposed projects will provide both sediment and nutrient control. This project has been identified as pivotal in the implementation of the Manokin and the Isle of Wight Bay Watershed Restoration Action Strategies.
- **PDAs Upper and Lower Pocomoke** – This project identified in the Lower Eastern Shore Conservation and Restoration Action Strategy will implement eight projects on PDAs and demonstrate the weed wiper technology in additional targeted watersheds. The proposed projects will provide both sediment and nutrient control. Once repairs and restoration are completed, estimates of the associated nutrient load reduction efficiencies can be estimated based upon sediment loss at each site.

County	Name	Current	N (lbs)	P (lbs)
Worcester	Franklin Branch	135 tons	418	32.4
Worcester	Coonfoot	580 tons	1,798	139.2
Worcester	Double Bridges	120 tons	372	28.8
Worcester	Timmonstown	133 tons	412.3	31.9

- **Manure Transport** – This project will transport 15,500 tons of poultry litter from Dorchester, Somerset, Wicomico and Worcester counties to farms in other regions who utilize it in accordance with a nutrient management plan or to alternative use industries. The project will remove an estimated 1,054,000 pounds of nitrogen and 930,000 pounds of phosphorus in the form of manure inputs from targeted watersheds. This project is key to meeting the goals identified in the Lower Eastern Shore Conservation and Restoration Action Strategy and the Comprehensive Conservation and Management Plan for the Coastal Bays.

Watershed Implementation Projects



Maryland Dept. of Natural Resources
 Chesapeake and Coastal Watershed Services
 Watershed Management and Analysis Division
 February 2003

0 15 30 60 Miles

1:175,000

2002 Accomplishments

In the past year, the NPS Program has had some notable program accomplishments and successes discussed below (See Major Accomplishments section). Progress was made in implementing best management practices in all nonpoint source areas through the provision of technical assistance, project funding or both. For a list of § 319-funded projects, see

<http://www.dnr.state.md.us/bay/czm/nps/projects/projectsy.html>. Programmatic efforts included:

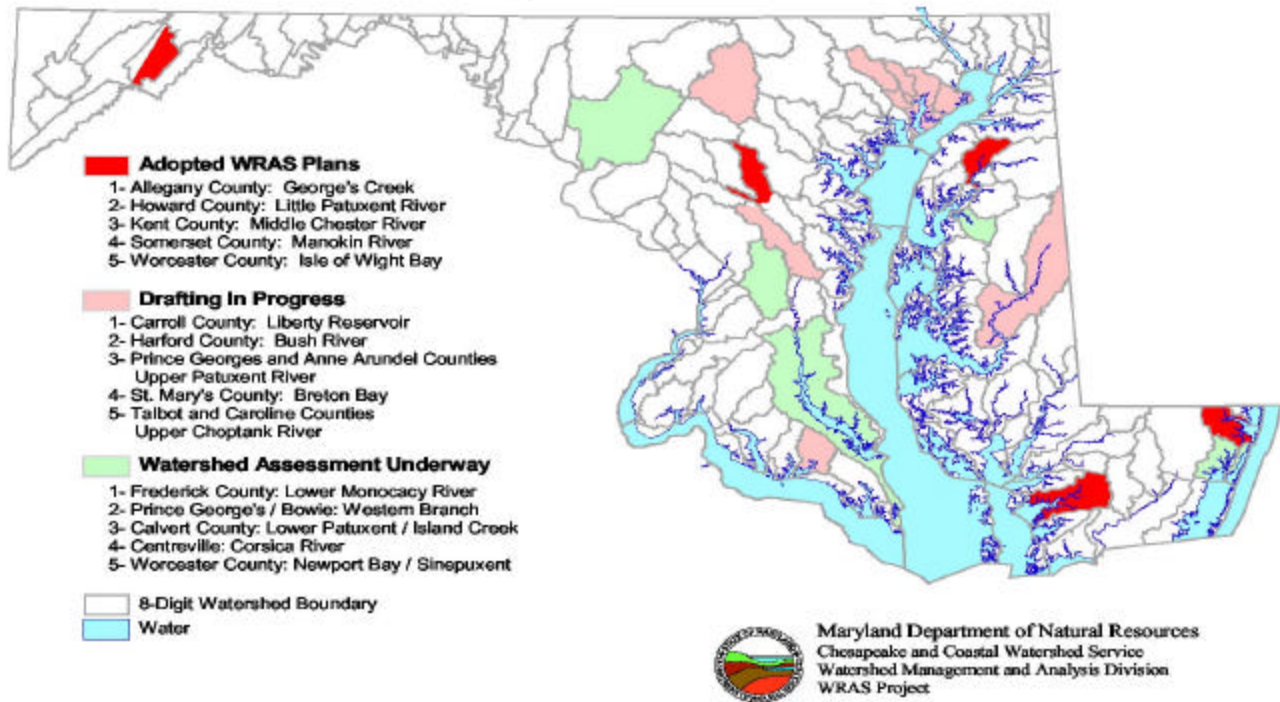
- Continued Integration of Multi-objective Watershed Management Planning
- Maryland Watershed Management Planning Strategy Development
- Watershed Restoration Action Strategy Program Refinement
- Nonpoint Source Total Maximum Daily Loads: Implementation and Linkages
- Increase in Nonpoint Source Program Visibility
- Coastal Nonpoint Program Implementation Work Groups
- Onsite Sewage Disposal System Management Initiatives
- Agricultural Programs
- Nonpoint Source Program Work Group Participation
- Progress in Related Programs: Clean Marinas, Tributary Strategies, Maryland Biological Stream Survey, Stream Waders Program

Continued Integration of Multi-objective Watershed Management Planning: DNR is continuing to lead multi-Departmental efforts to fund and support watershed management planning. Two particular efforts, the Watershed Restoration Action Strategies Partnership (WRAS) Program and Maryland's own Watershed Commitments Task Force (CWiC), a subgroup of the Chesapeake Bay Program, help initiate, fund and support consistent watershed management planning approaches statewide.

The signature effort of Maryland's NPS Program is the WRAS Program, funded and assisted in collaboration with Maryland's Coastal Zone Management Program. The WRAS Program provides local governments with extensive watershed assessment and restoration services, as well as watershed planning funds and technical support. The goal of WRAS-sponsored watershed planning is to protect and restore water quality and habitats. WRASs help assist local governments to assess and prioritize environmental needs, and implement restoration and protection projects by providing a wealth of local-scale data to assist with priority setting. In addition, the WRAS program helps ensure that other entities within DNR, MDE and MDA, SHA, etc., are coordinating, targeting and leveraging their efforts in priority watersheds. Ten WRASs are currently underway, five have been drafted, and each year five more are initiated. The Program has worked with 15 WRASs, the goal is to complete 50 WRASs by 2010.

Watershed Restoration Action Strategy (WRAS) Status

Project Status October 2002



The WRAS Program has grown since its inception in 2000; developing strong and collaborative relationships with local governments, Soil Conservation Districts, urban and rural citizens, and local watershed associations. The WRAS Program provides stakeholders with integrated scientific information, funds, and technical assistance for assessing watersheds and setting priorities to address multiple objectives. The enhanced targeting and priority-setting resulting from watershed planning results in restoration and conservation activities designed to maximize environmental benefits and meet multiple natural resource management objectives.

The WRAS Program promotes strategic implementation of watershed protection and restoration activities primarily through support of:

- **Local Watershed Assessment:** DNR provides technical resources to local governments and associated stakeholders including: extensive stream corridor assessment surveys; field surveys including water quality analysis; fish and benthic sampling and assessment services; and compilation of current, historical, and forecasted land use, and environmental and other natural resource information to support development of local watershed restoration plans and identify and prioritize restoration projects (for WRAS products [see http://www.dnr.state.md.us/watersheds/surf/proj/wras.html](http://www.dnr.state.md.us/watersheds/surf/proj/wras.html)).

- **DNR Project Coordination and Funding:** In addition to funds for planning, each WRAS has a DNR coordinator to facilitate delivery of state and/or federal technical assistance.
- **Restoration Project Implementation:** DNR helps coordinate technical and financial assistance for implementation of various projects such as wetland or riparian restoration, while leveraging resources from private and public partners.

As noted above, the WRAS program is DNR's signature watershed planning initiative to assist local governments in developing capability in watershed management planning. Fifteen watersheds have benefited to date; more are to be included each year. The year 2002 saw the completion of the first year's WRASs (WRAS1s) and the evaluative WRAS Roundtable, plus the funding for implementation of WRAS1 projects, for WRAS2 planning, and WRAS3 selection.

In addition, there is increased integration of watershed approaches into state and local government activities statewide. DNR provided ongoing funding, training and outreach assistance to local governments on watershed management planning techniques. At the same time, in 2002, DNR also incorporated the watershed approach into various programmatic requests for proposals (RFPs), within and across DNR Units, and within Coastal Zone Management Division activities (e.g., Coastal Nonpoint Program request for septic management strategy proposals). Also this year, the NPS Program obtained representation on the USDA/NRCS Maryland State Technical Committee. In the spring, a Maryland agricultural stakeholders meeting (MDA, USDA/NRCS, etc.) was held. The meeting provided DNR and MDE staff with an overview of agricultural agency players and stakeholder perspectives on waters quality issues. In addition, the various programmatic components of DNR (Fisheries, Wildlife, Forestry, etc.) attended a DNR-wide watershed collaboration retreat in May to help strengthen cooperative watershed planning and project selection.

In 2002, three specific interstate watershed partnerships were advanced. The following watersheds were nominated to EPA for the Watershed Initiative applications process: St. Martin's River-Bishopville Prong in the Isle of Wight watershed jointly with Delaware, the Potomac River with Virginia, and Anacostia River with the District of Columbia. Participants in the proposals' development found the process valuable in enhancing ongoing cooperation and communication, and noted that in each case increased activity and coordination in these watersheds will likely result.

Maryland Watershed Management Planning Strategy Development: The Chesapeake Bay's Watershed Commitments Task Force (CWiC) is working Bay-wide to help signatory states meet the 2/3 watershed management planning commitment in the Chesapeake Bay 2000 agreement (see <http://www.chesapeakebay.net/agreement.htm> Watersheds section) Part of CWiC's mission is to sponsor and support training in watershed management planning for local governments. Members of the Bay's CWiC include representatives of the 4 Bay signatory states (Maryland, Pennsylvania, Virginia and the District of Columbia), the federal Chesapeake Bay Program partner agencies, as well as local government and watershed association representatives. In 2002, a new Bay-wide Community Watershed Dialogue effort, sponsored by CWiC, formed to provide a mechanism for broader training and technical assistance for local watershed management planning efforts.

The Maryland CWiC group worked this year to define needs for inter-Departmental coordination and strategies, including the need for Maryland to develop a Watershed Management Planning Manual that will be initiated sometime in 2003. Maryland CWiC members include representatives from local governments, and the Departments of Planning, Environment, Transportation, Agriculture, as well as

DNR. In spring 2002, a major initial survey of local (county) governments was completed to assess the existence of watershed plans. A more in-depth follow-up survey will be completed in 2003. The survey findings, the needs it identified, and the recommended next steps for incorporation into the Watershed Management Planning Strategy are described in detail below.

Current level of watershed management planning

The initial Maryland CWiC survey focused in two areas. First, information was identified on watershed plans completed or underway. In addition, areas targeted for preservation, sensitive area management, or other resource or land management issues with a watershed focus were identified. These management areas provide potential for expansion of the land and resource management efforts into a watershed management plan. The second area of questions dealt with identifying local needs to expand or incorporate watershed planning as a standard county planning function. The questions addressed training, technology, staffing, funding, and public or political support needed to increase or include the watershed planning function. Information was also collected for future use on citizen involvement through watershed associations or monitoring programs and to identify, where possible, the overall need to encourage citizen activism at the local watershed management level.

The map entitled, “Watershed Management Planning Status” (see pg. 12), provides an overview of watersheds that have completed plans, and plans underway. The second map, entitled “Plans with a Partial Watershed Focus” (pg. 13), shows other efforts with a watershed focus that may provide a foundation for future planning efforts. To date, 2 % of the state’s area within the Bay watershed has or will be covered with watershed management plans -- after the completion of those in progress.

The Counties who are already engaged in watershed planning were asked why they began the process. Their responses included flooding studies, dredging issues, wetland mitigation needs, special requests by the County Council. Most currently in the metropolitan counties, the planning efforts are driven by the requirements in the municipal stormwater NPDES permits. In Maryland, these permits require watershed assessments and restoration work. However, the watershed planning is generally conducted at a scale smaller than the 8 digit (WRAS-size) level. Working in smaller scale watersheds provides the locality with a manageable area for accomplishing restoration that will result in measurable water quality and habitat improvements.

Watershed planning is primarily accomplished by county staff with citizen input or through contracts for consultant services. Alternative approaches were also identified in southern Maryland Counties. One college in southern Maryland has been working with the county and the community and has obtained funding from several sources to prepare a watershed management plan, and conduct water quality and habitat studies. This is an excellent model for utilizing the expertise and resources of a community-oriented academic institution to develop the plan and evaluate the outcome. In another county, community watershed associations have taken the lead in developing watershed management plans with the input and assistance of the county. This process has enabled plans to be completed with the intent of county adoption, has provided an educational tool for the community, and has given the community ownership of the plan. These alternative approaches should be investigated for other watersheds where staffing limitations exist.

Needs Identified

The following is a summary of the primary watershed planning needs identified in the discussion with each of Maryland's 23 counties.

1. The primary need identified by 75% of the counties is for additional staffing and/or funding to provide specific "place-based" watershed planning. The lack of staff to do what is perceived as additional work is a major impediment to watershed planning. The only local governments that did not identify this as a specific need are the larger metropolitan counties who are already actively engaged in watershed planning (mostly through stormwater permit programs). Some local governments indicated they were so overburdened that their ability to allocate the staff time needed to administer any new watershed planning grants is limited or nonexistent.
2. The second most identified need (50%) was political support. This is essential if additional staff and resources are to be allocated for watershed management planning. Consequently, "marketing" to the elected officials will be needed if they are to understand the benefit of watershed planning to both accomplish county goals and strategies as well as state and Bay-wide goals.
3. Nearly 40% of the counties identified a need for training of and other staff on watershed planning. Many of the more rural counties do not have a clear picture of what a watershed plan is and the connection with land-use planning or preservation efforts. The elements of a plan are not clear and where watershed planning should or should not be done were two recurring themes. Many planners, though, expressed an interest and desire to do watershed planning if the political support was there.
4. A few counties expressed a need for data development and data management support such as a dedicated geographic information systems (GIS) staff person.

Other Issues Discussed

The survey provided an opportunity for discussion of other related issues regarding watershed management planning and state/Bay initiatives.

1. The counties that have been engaged in watershed management planning for many years expressed concern that their watershed planning efforts would both "count" towards the Bay commitment and enable them to qualify for future implementation funding. They expressed concern that they may be expected to revise plans already completed to meet various program needs to include "new" or evolving programs or plan criteria (e.g., TMDL implementation, etc.).
2. One questioned the need to do watershed planning for more watersheds since the one WRAS they already completed identified much more restoration work than they can accomplish with current anticipated funding and staff.
3. The relevance of scale was identified in several Counties. For most, working at the Maryland 8-digit watershed scale is too large. In highly urban areas, assessments and restoration work are focused at a much smaller scale, whereas State programs are often not flexible enough to work at different levels. In addition, the Stormwater NPDES permits requires assessments, monitoring, planning and restoration at a smaller scale.

4. Lack of coordination of watershed planning programs at the state and federal levels was noted as a concern and potential conflict. Counties felt that they would have to sort through these conflicts on their own unless this was addressed.

Recommended Next Steps

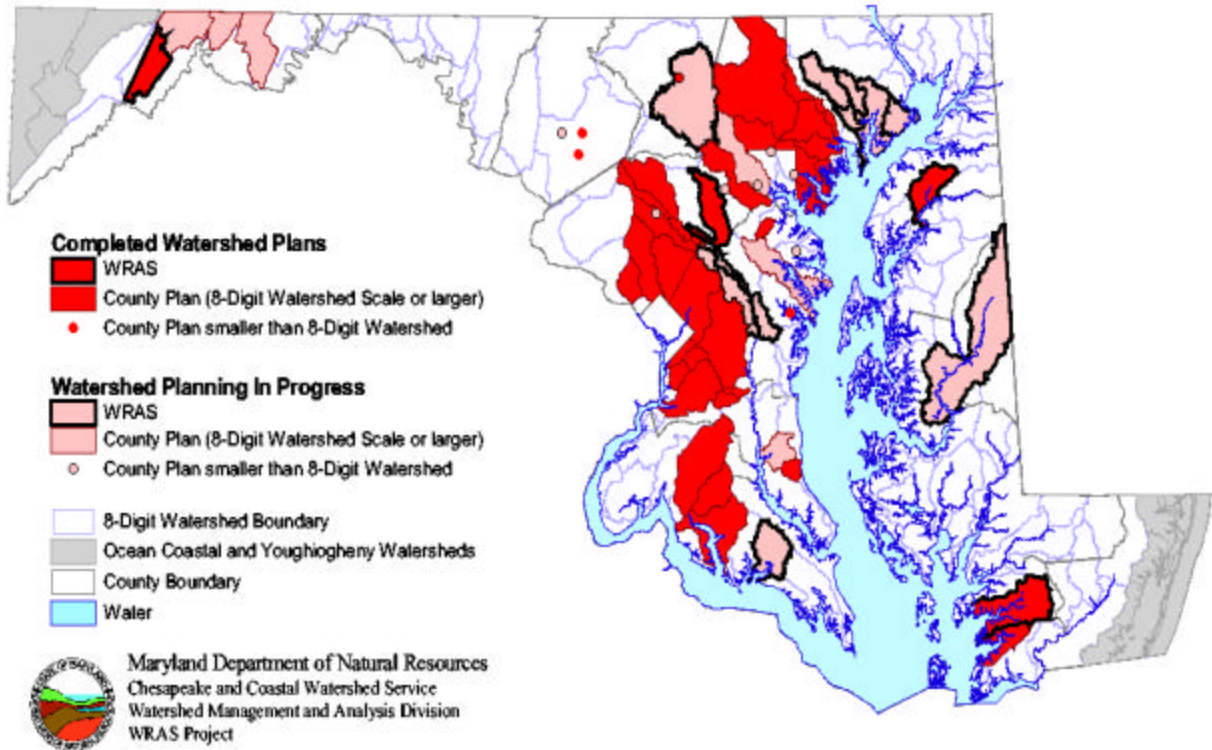
Based on the needs and issues identified, the following actions were recommended for incorporation into the development of the Maryland Watershed Planning Strategy and Maryland's watershed planning and implementation programs.

1. Additional staffing: There were several options expressed for meeting the staffing needs for watershed management planning. In more rural counties, a shared position or circuit rider type position could be developed.
2. Training for watershed management planning: Training is essential, especially considering the various approaches for planning under the different state and federal programs. All state programs need to support the same core elements and process (e.g., through the development of a state watershed management planning guidance manual with follow-on training and outreach).
3. Coordination with Master Plans: The Comprehensive/Master Planning process needs to recognize the unique issues of specific watersheds that are identified through the watershed management planning process. Some Counties have developed mechanisms for addressing this issue but most have not. The process needs to develop a dialogue between natural resource managers and land use planners so that the needs of both the built and natural communities are balanced.
4. Support of the local elected officials: In order to reach the Chesapeake Bay 2000 Agreement watershed plan coverage goals, local officials need to believe that watershed management planning is a good idea that will benefit the overall land and resource management of their jurisdiction. Efforts must be placed on developing marketing tools and delivering the message to the appropriate audiences. Opportunities would include Maryland Association of County (MACO) meetings, Planning Director meetings, Soil Conservation District Managers meetings or MD Association of Soil Conservation Districts meetings.
5. Share success stories: Good plans should be highlighted or showcased. There is a tremendous opportunity in Maryland to learn from each other given the range and history of watershed planning in the state. The annual Tributary Team meeting, MACO, Maryland chapter of the American Planning Association annual meeting, a watershed management and restoration conference would provide venues for highlighting a variety of experiences.

Watershed Management Planning Status

Chesapeake Bay 2000 Agreement Commitments

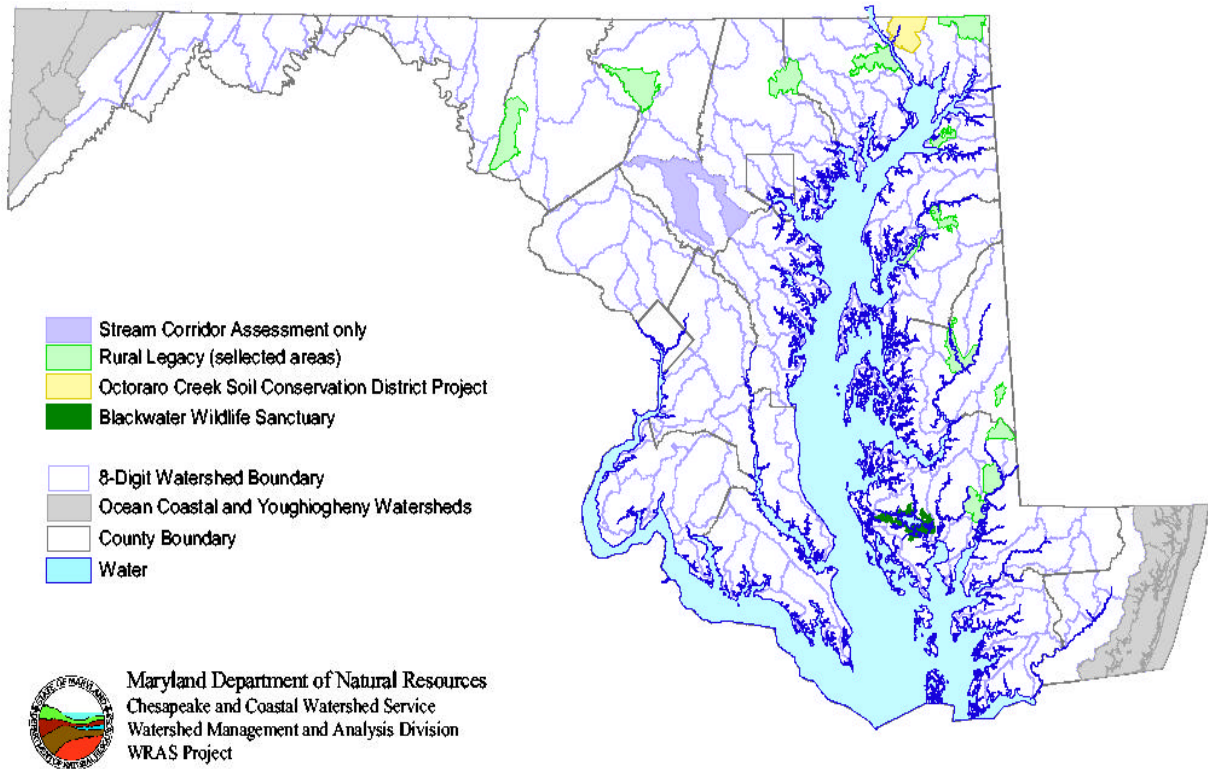
June 25, 2002 DRAFT



Plans With A Partial Watershed Focus

Chesapeake Bay 2000 Agreement Commitments

June 25, 2002 DRAFT



WRAS Program Refinement: One of the objectives of the WRAS Program is to institute refinements based on program experience. To gain local government participant input, a first WRAS Roundtable was held on July 17, 2002 in order to elicit an assessment of the WRAS Program from the perspective of the local governments. The morning session was devoted to presentations by each of the WRAS local government representatives, who summarized the process and results of their completed WRASs. The afternoon session was devoted to a group process technique identifying core issues and strengths of the WRAS effort. The analysis and process proved very useful, informative, and insightful and will help shape and give direction to the future WRAS Program. Results are summarized below.

Thirty-one people attended the WRAS Roundtable, 14 were DNR staff who participate directly or indirectly in the WRAS Program, 3 people were from other participating state agencies, and 14 were from local governments. Below is a summary of comments and follow-up direction from the 14 participating local government representatives. Planning for a roundtable analysis for the second round of WRAS is underway.

Summary of Overall WRAS1 Program Analysis: Local Government Perspective

Strengths and weaknesses:

- C WRASs proved to be valuable capacity-building exercise that provided the counties and stakeholders an opportunity to collaboratively focus on specific watersheds, watershed issues, and goals. The collaborative process and securing citizen involvement however was difficult for most counties to successfully obtain.
- C Data synthesis and analysis were provided with the Characterization (a summary of readily available data), the Stream Corridor Assessment study (SCA), the Synoptic Water Quality and Benthos/Fish Surveys (Synoptic Survey), and other special studies (e.g., Forest Assessment Methodology). These were overall highly valued. However, delivery was not always timely and in some cases did not direct management decisions. In addition, local governments were not always aware of data provided. The data and information did not always correspond to the scale of the protection or restoration area of concern.
- C The overall responsiveness provided by DNR received high marks and the coordinators were highly valued. Coordinator qualities cited included: willingness to attend meetings, grant process support, organizational skills, persistence, keeping the process moving, developing time lines, being tenacious, and providing encouragement.

Mid-course correction needs:

During WRAS development:

- Continue to make DNR analysis more ‘user friendly’ and lend assistance in interpretation and use. Identify more data at the appropriate scale when possible.
- Work to ensure that the Stream Corridor Assessment is completed early enough in the process to maximize its use – this requires local government cooperation in gaining landowner access permissions and starting the survey early, too.
- Keep in mind that short time frame has a positive side: given endless time, completion of WRAS products could take endless time (given competing priorities).
- Provide support for the public participation component.

- Help governments establish a list of potential objectives early in the process so they know what to shoot for.
- Investigate potential for securing watershed managers at the local level.

Next steps after WRAS completion:

- Work with completed WRASs to assist in fine-tuning of goals, timelines, etc.
- Work to target technical assistance and funds for implementation
- Give assistance in identifying match opportunities for implementation.
- Continue to disseminate information about implementation grant and partnership opportunities for completed WRASs.

Nonpoint Source TMDL Implementation and Linkages: While MDE is responsible for developing TMDLs, DNR is helping define TMDL implementation for nonpoint sources. Funds in the § 319 program housed in DNR have been keyed to funding projects in watersheds with watershed plans and TMDLs, as much as possible. Enhanced coordination with the TMDL program in 2002 resulted in such milestones as an interagency TMDL Implementation workshop, and a proposal to jointly select TMDL projects through an inter-Departmental coordination process. In May, DNR participated with MDE in a joint Maryland TMDL/NPS presentation at the joint states/Region III – Nonpoint Source/Water Quality Standards/TMDL meeting at Rehoboth Beach, Delaware.

Watershed assessments funded by the § 319 and Coastal Zone Management Programs, through WRASs at DNR, are providing monitoring data which MDE is using to refine TMDL estimates. At the same time, DNR has both supplied and reviewed MDE data gathered to validate TMDL models in given watersheds. The NPS Program has been an active participant in the interagency TMDL Work Group for several years. The Work Group meets monthly to discuss TMDL policy and issues, as well as project-specific TMDL development information. As an outgrowth of the Work Group, a TMDL Implementation Meeting was held in 2002 among all the agencies to begin the discussion outlining Maryland's TMDL implementation strategy and vision.

Increase in NPS program visibility: In 2002, the NPS Program developed an objective-oriented outreach strategy to guide and steer its outreach efforts to increase the program's visibility, local government participation in NPS planning and implementation, and public awareness and participation in watershed planning. The strategy builds on and incorporates objectives identified in the NPS Management Plan and the FFY02 NPS work plan with a dual focus on grant outreach and NPS pollution mitigation outreach. The strategy targets outreach to where it pays most by setting the following 3 goals and sub-objectives:

1. Increase participation in NPS planning and implementation by local governments.
 - Increase the number and quality of grant applications
 - Participate in outreach workgroups
2. Increase public awareness and participation in watershed planning and projects.
 - Develop and distribute fact sheets and other project information to the public.
3. Increase program visibility with legislative (state, federal) and funding agencies.
 - Website redesign and update
 - Site tours and field visits

The outreach strategy and examples of products are in Appendix C.

Coastal Nonpoint Program Implementation Work Groups

The national Coastal Nonpoint Program is shifting emphasis from program approvals to implementation. NPS Program staff have taken lead roles in several national Coastal Nonpoint Program Work Groups and Task Force efforts to strengthen and refine the CNP Program. Maryland staff helped plan the forthcoming Spring 2003 Coastal Nonpoint Source Meeting which will address numerous issues. In addition to chairing the Evaluation and Reporting subgroup, staff participated in the Conference Planning Committee, and review of the Coordination, Monitoring and Tracking, and Implementation subgroup white papers and planning efforts.

Onsite Sewage Disposal Systems Management Initiatives: There was increased emphasis in 2002 on management of Onsite Sewage Disposal System (OSDS) impacts. This was accomplished through funding of various projects with NOAA's Coastal Nonpoint Section 6217 and other funds, participation in the new Chesapeake Bay Tributary Strategies Development process, and joint sponsorship of a Coastal Decision-Makers Workshop on nitrogen reduction from OSDS scheduled for Spring 2003.

In cooperation with the Maryland Department of the Environment, the Department of Natural Resources is using federal Coastal Nonpoint Source Program funds (Section 6217) to help coastal counties manage septic impacts. These projects are described below:

- 1) Eight counties are developing accurate and complete inventories, databases, and maps of properties served by septic systems. Their currently outdated, incomplete or missing system records and information hamper their ability to strengthen OSDS management efforts. These funds will enable local governments to reduce the impacts of septic systems and protect environmentally sensitive areas by (a) identifying areas in need of increased monitoring due to potential water quality impacts, (b) identifying areas that should be hooked-up to sewer systems, and (c) targeting homeowners for outreach on system maintenance.
- 2) Four counties and one tri-county council are developing OSDS management strategies based upon protection of nitrogen-sensitive waters. The strategies are being designed as transferable examples to help ensure that OSDS are appropriately sited, designed, operated, and maintained. Under this grant, localities will delineate nitrogen sensitive waters; develop an appropriate OSDS management plan; and propose regulatory changes or programs to successfully implement the plan. These program changes could include: incorporating requirements to strengthen the OSDS inspection, maintenance and / or replacement processes, or establishing programs to increase the use of innovative OSDS.
- 3) The University of Maryland, Center for Environmental Science, is receiving an award to conduct a demonstration study to support local government quantification of septic system input to surface waters. Funds will be used to assess and map the plumes of sewage and septic derived nitrogen within the Choptank and Patuxent Rivers (with a special focus on Island Creek) to assist with planning and targeting of local watershed strategies. The goal is to use the information about the source and distribution of sewage and septic derived nitrogen to develop incentives for the implementation and tracking of coastal nonpoint source management measures, especially where inadequately treated effluent is contributing to the surface water nitrogen loads. The study will augment other long-term water quality improvement efforts at the local level by helping to identify the impacts of housing density and distribution on the nutrient loading from septic systems, and help to elucidate the effectiveness of shared septic facilities.

4) Together with the Maryland Chesapeake Bay Tributary Strategies Development Workgroup and the National Estuarine Research Reserve, the Coastal Nonpoint Program is planning a Coastal Decision-Makers' Workshop entitled: "Reducing Nitrogen Pollution from Septic Systems " on March 12, 2003 at Patuxent Wildlife Center. Nitrogen is the key type of pollution targeted by the Chesapeake Bay clean-up effort at present. Tentatively, agenda topics will include national, regional and local perspectives on:

- Impacts of Septic Systems on Water Quality
- Alternative Technologies
- Management & Policy Issues:
 - Identifying the Problem
 - Mapping Areas of Special Concern (nutrients)
 - Ensuring Maintenance of Nitrogen-removing Systems
 - Maintenance Challenges & Options
 - Land Use Implications of Nitrogen-removing Systems

Agricultural Programs

A strong agricultural industry and a healthy environment go hand in hand. The Chesapeake Bay Watershed Model, using BMP tracking data supplied by Maryland, indicates that Maryland farmers achieved the majority of water quality objectives in every major watershed and continue to exceed their goals for implementing best management practices (BMPs) to manage nutrients, control erosion and protect water quality. As we move ahead into the future, agricultural and soil conservation partners will continue to preserve Maryland's rural legacy by developing and promoting farming practices that are both environmentally sensitive and economically sound. Maryland has a variety of agricultural programs (Nutrient Management Program, MD Agricultural Water Quality Cost Share Program, Soil Conservation and Water Quality Planning, Conservation Reserve Enhancement Program, Manure Transport Program, and Agricultural Water Management Program) described below that address the control and reduction of nonpoint source pollution.

Nutrient Management /Water Quality Improvement Act (WQIA) In 1998, the Maryland General Assembly passed landmark legislation that placed Maryland at the forefront of national efforts to protect water quality. The Water Quality Improvement Act (WQIA) established both short and long-term strategies for reducing nutrient levels in our streams, rivers and Chesapeake Bay. The most significant feature of the Act is a provision requiring nutrient management plans for virtually all Maryland farms. The WQIA changed the nutrient management program from its voluntary status to a regulatory program. It requires farmers who use chemical fertilizers to submit a nitrogen and phosphorus based nutrient management plan to the Maryland Department of Agriculture (MDA) by December 31, 2001 and implement it by December 31, 2002. Farmers who use animal manure or sludge must have and implement nitrogen based plans by the same dates as those who use chemical fertilizers. Those who have sludge or animal manure have until July 1, 2004 to submit phosphorus based nutrient management plans and must implement them by July 1, 2005. Although the new law includes a number of deadlines and requirements, it also offers many new incentives aimed at helping farmers comply.

By the end of calendar year 2002, over 75% of farmers managing 88% of Maryland's agricultural land were in compliance with the WQIA. As of December 31, 2002, Maryland farmers officially submitted nutrient management plan information for over 1.3 million acres of agricultural land. The information

submitted includes 4,331 completed nutrient management plans covering 799,913 acres. Another 2,443 farmers submitted information on a Justification for Delay form indicating they were still working with a consultant to develop their plans on a total of 523,947 acres.

During 2002, more than 1100 people attended 35 training workshops on a variety of specialized topics including nutrient management planning for pastures, nursery and greenhouse operations, fruit production, animal operations and residential/commercial lawn care. Core topics on the fundamentals of nutrient management, the Phosphorus Site Index and how to write a nutrient management plan were also offered.

More than 1300 farmers attended 54 nutrient applicator voucher training sessions in 2002. Applicator training courses are required by the WQIA for farmers who apply nutrients to 10 or more acres of cropland.

For more information on available publications and program information, please see the MDA Nutrient Management website at <http://www.mda.state.md.us/nutrient/nutmgmt.htm>

Maryland Agricultural Cost Share (MACS) State and federal funds are used to provide grants to Maryland farmers for the installation of best management practices (BMPs) to address existing or potential water pollution conditions associated with farming activity. Farmers may receive up to 87.5% of the cost of approximately 30 eligible BMPs. For more detailed information on the program, see the MACS website at: <http://www.mda.state.md.us/resource/mawqca10.htm>

State fiscal year (SFY) 2002 was a landmark year for installation of BMPs with a record \$10.7 million provided to farmers to install 3400 BMPs. Farmers participating in the program invested over \$1.2 million of their own money for these practices which collectively will prevent 23,350 tons of soil annually from impacting Maryland waterways and improve management of an estimated 3,330 tons of animal manure daily.

Cover crops continued in popularity as a tool to prevent soil erosion and control nutrient movement. Farmers on the Eastern Shore planted over 90,000 acres of cover crops and a \$ 319 grant supported installation of over 9300 acres of cover crops in Antietam, Catoctin Creek and Monocacy watersheds. In 2002, these cover crops prevented movement of an estimated 845,000 pounds nitrogen and 19,900 pounds of phosphorus.

MACS provided more than \$3 million in cost share for BMPs installed and bonus payments for enrollment of sensitive land into the Conservation Reserve Enhancement Program in 2002. Additionally MACS funded 337 nutrient management plans developed with the services of private sector consultants. These plans were developed with \$ 460,000 in cost share support and affected 111,000 acres of agricultural land.

Soil Conservation and Water Quality (SCWQ) Program Soil Conservation and Water Quality (SCWQ) Plans are at the heart of Maryland's resource conservation and protection efforts. Developed and implemented through a local delivery network of soil conservation districts, these plans help farmers manage natural resources and identify and solve potential environmental problems while reaching optimal but sustainable production goals. SCWQ plans contain a menu of best management practices (BMPs) to help farmers prevent sediment, nutrients and fertilizers from impacting nearby waterways.

In 2002, 1,450 soil conservation and water quality (SCWQ) plans were developed for 110,360 acres with an associated 6,800 BMPs installed. Plans are considered current for a maximum of ten years. In addition to planning acreage for new cooperators, local Soil Conservation Districts (SCDs) keep a rolling tally of acreage planned in the past and have an ongoing system of regular updates. In 2002, 975 existing SCWQ plans were updated to manage 106,800 acres.

Conservation Reserve Enhancement Program (CREP) Maryland was the first state to take advantage of the innovative Conservation Reserve Enhancement Program (CREP), which allows states to focus on natural resource issues of the greatest local concern. Under the program, Maryland landowners can protect sensitive streamside areas and highly erodible lands and restore wetlands. CREP provides annual rental payments for 10–15 years and cost share for installing BMPs to conserve these sensitive resource areas. Since program initiation in October of 1997, Maryland landowners have protected over 53,000 acres of these sensitive lands through CREP enrollment and BMP installation.

During calendar year 2002, farmers enrolled a total of 17,822 acres in CREP. Included in this total are 10,879 acres of riparian vegetated buffers, 1,449 acres of riparian forest buffers, 607 acres of restored wetland, and 2,972 acres of highly erodible land conservation. For additional information see the CREP website at <http://www.mda.state.md.us/resource/crep.htm>

Manure Transport Program The Manure Transport Program provides support to animal producers who have excess manure and need to find alternative means of managing it in order to be in compliance with the WQIA. The two-fold objectives of the program include subsidizing the cost of transporting animal manure to make it affordable for animal producers to address excess manure and providing an incentive for the development of alternative technologies and business ventures to create a market for use of animal manures. In SFY 2002, participants received \$855,000 to transport 47,500 tons of manure from areas with high phosphorus levels. See <http://www.mda.state.md.us/nutrient/transport.pdf> for more information.

Operations receiving manure for land application under the program must apply it in accordance with a nutrient management plan prepared by a certified consultant. Receiving operations with alternative uses for manure are also eligible to participate. Current alternatives to direct land application include the use of poultry litter as a substrate for growing mushrooms and the manufacture of fertilizer pellets by Perdue AgriRecycle for use in landscaping and shipment to other regions of the country. To date, practically all of the manure transported has been poultry litter. Reimbursement for all participants is capped at \$20 per ton. Fifty percent of the cost of transporting poultry litter is paid by commercial poultry companies. Livestock producers receive up to 87.5% of transport costs from public funds.

Agricultural Water Management Program The Maryland Department of Agriculture (MDA) regulates agricultural public drainage facilities administered as Public Drainage Associations (PDAs). PDAs are independent political subdivisions with local taxing authority and cover over 850 miles of drainage ditches in the coastal zone, mostly on the Eastern Shore. The PDAs are required to develop and implement approved operation and maintenance plans which address sediment control and water quality protection.

MDA assists PDAs to conduct biannual inspections and provides technical assistance through the SCDs. Typical best management practices include vegetative filter strips and channel stabilization.

Over the last three years the Maryland Department of Agriculture, Resource Conservation Program has effectively used § 319 funding to promote and coordinate a program to support progressive maintenance techniques and BMP's that allow continued drainage but also provide environmental benefits consistent with the Chesapeake Bay Program goals. To date, funding has provided improvements in 27 PDAs by promoting the construction of wetland areas, installation of water control structures to slow water movement and grade control structures and repair and stabilization of bank blowouts caused by storm events. Routine maintenance practices such as mowing or channel clean outs are supported with local funds from tax revenues.

Nonpoint source § 319 funds that went towards implementation of innovative BMPs were leveraged by State funds and local funds raised through taxing landowners beneficiaries. The Soil Conservation Districts, PDA Coordinators and NRCS engineers' time in planning, design, permit applications, construction checks and final approval were all services provided as in-kind and free to landowners and PDAs.

Nonpoint Source Program's Work Group Participation

Maryland staff provided input and coordination in several national and regional Work Groups: the national § 319 Results/Performance and Outreach Work Groups, as well as the Chesapeake Bay Program's Outreach and Septics Task Forces (see, e.g., Onsite Sewage Disposal Systems summary above).

Other Related Programs:

Clean Marinas: Maryland is viewed as the national leader in its early efforts to establish a Clean Marina Program. Clean Marinas provides certification of public and private boating facilities as Maryland Clean Marinas (as part of Maryland's Coastal Zone Management plan, in response to §6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990). Through agreement with EPA and NOAA, Maryland must certify 25% of its boating facilities as Clean Marinas in order to avoid potential additional regulation of the marina industry. As of 2002, there were 52 Certified Clean Marinas and 11 Certified Clean Marina Partners (63 total towards the goal of 125 facilities certified by the end of 2004 --out of a universe of about 600 potential facilities). Approximately 90 additional marinas have signed pledges.

Tributary Strategies Program: The Tributary Strategies Program was created to reduce Maryland's nitrogen and phosphorus pollution to the Bay, through a cooperative effort by state agencies, local governments, Tributary Teams and others. Since 1985, Maryland has implemented programs and practices that resulted in a 28% reduction in nitrogen and a 39% reduction in phosphorus (reductions through 2000, the latest available data year). Appendix C contains the most recent (2000) BMP implementation totals.

In October 2002, Maryland announced preliminary nutrient goals to improve dissolved oxygen in the Bay and ultimately remove the Bay from the EPA's List of Impaired Waters. These draft goals were revised in January 2003, and are included in Appendix B. The new Tributary Strategies to achieve the goals, slated for completion by December 2003, and their subsequent implementation, will be paramount in the statewide effort to restore and protect the Chesapeake Bay.

The Tributary Teams, Maryland's public outreach component of the Tributary Strategies are focused not only directly on Chesapeake Bay issues, but are increasingly focused on restoring upstream their local

rivers and streams, engaging in watershed management, and providing a forum for the coordination of diverse water quality and habitat initiatives. This is evident in the increased effectiveness of Team partnerships with watershed groups and local governments to implement local solutions to challenging problems.

Maryland Biological Stream Survey (MBSS): The MBSS is intended to provide unbiased estimates of the condition of streams and rivers of Maryland on a local (e.g., drainage basin or county) as well as a statewide scale. To date, the MBSS has focused on wadeable, headwater streams. The MBSS is a survey based on a probabilistic stream sampling approach where random selections are made from all sections of streams in the state that can physically be sampled. The approach supports statistically-valid population estimation of variables of interest (e.g., largemouth bass densities, miles of streams with degraded physical habitat, etc.). When repeated, the MBSS provides the basis for assessing future changes in ecological condition of flowing waters of the state.

MBSS has been monitoring the non-tidal streams of Maryland since 1993. A stratified random survey design is used and nearly 2000 sites have now been sampled for physical habitat, water chemistry, and biota. The survey results have provided information to assess status and trends, identify outstanding and degraded waters, identify stressors and stressed areas, establish a biological inventory of stream biota, and document the response of the stream network to collective management activities such as watershed restoration and TMDL implementation. For further information, see <http://www.dnr.state.md.us/streams/mbss/index.html>

Monitoring results of randomly selected sites to date indicate that only about one in ten miles of freshwater streams is healthy, about half are unhealthy, and over 40% show obvious evidence of stress. Major causes of degradation are altered hydrology from impervious surfaces, acid precipitation, eutrophication from agricultural activities, a scarcity of wood and stream-side trees from historical forestry practices and land clearing, and excessive silt from bank erosion and surface runoff. The linkage between the stream network and the Chesapeake Bay and its major tributaries is clear. However, factors such as distance from the Bay and tidal mixing seem to obscure these relationships.

The current statewide cycle of surveys began in 2000 and will be completed in 2004. MBSS data provide valuable insights into the cumulative impacts of acid rain and acid mine drainage, urban and agricultural runoff, and point source discharges on streams and help to direct habitat restoration and protection actions, including support of Watershed Restoration Actions Strategies.

Maryland Stream Waders: To supplement the MBSS and enhance DNR's ability to assess the health of streams at local scales, a volunteer monitoring program managed by Monitoring and Non-Tidal Assessment Program (MANTA) staff and called Maryland Stream Waders was launched in 2000. Each year, about 200 citizen volunteers and teachers learn about stream ecology and impacts of land use on streams "in their backyards," while also providing valuable data on stream health. Information gathered by volunteers helps DNR, MDE, and local governments target and evaluate stream restoration projects. The current goal is to increase the number of volunteers to 300. (See the Stream Waders 2002 website: http://www.dnr.state.md.us/streams/mbss/mbss_volun.html .

Ongoing and Future Efforts

The Nonpoint Source Program works to ensure that Maryland continues to fulfill the program requirements of both the § 319 Nonpoint Source Program (Clean Water Act) and the 6217 Coastal

Nonpoint Program (Coastal Zone Act Reauthorization Amendments). The Program will continue to administer the federal grants and strive for integration of programs, and efficiency and accountability in allocation of funds, including improved documentation of project benefits and accomplishments. In addition, the Program will continue to lead efforts to create 50 comprehensive watershed plans across the state by 2010, and to facilitate and/or track the implementation of nonpoint source and watershed planning-related Chesapeake Bay and Coastal Bays Management Plan commitments. These efforts will be accomplished by continuing to leverage and work with other governmental and nongovernmental partnerships, and supporting new nonpoint source control initiatives as issues arise.

Future Goals

- Provide future funds for WRAS development and implementation.
- Participate in the national § 319 Performance/Results and Coastal Nonpoint Program workgroups, as appropriate
- Continue efforts at § 319 implementation and Program Integration, especially TMDL implementation, monitoring, stormwater, USDA Farm Bill program, and drinking water protection (source water and wellhead protection)
- Pending final federal guidance, update the NPS Management Plan and Coastal Nonpoint Program 5- and 15-year plans in 2004.
- Continued support and/or coordination of various supporting watershed monitoring efforts, e.g., MBSS and Stream Waders. Their goals include:
 - Use MBSS and Stream Waders data to document improvements in stream health resulting from restoration and protection actions.
 - Increase the amount of MBSS and Stream Waders information/data that is readily available to the public via the DNR web site
<http://www.dnr.state.md.us/streams/index.html>
 - Expand MBSS sampling to include 1100+ miles of tidal, freshwater/brackish streams
 - Increase the number of Stream Waders volunteers from about 200 to 300 each year.

Appendix A: Nonpoint Source Program Financial Information

Nonpoint Source Program Funds

The State of Maryland currently receives over three million dollars from the United States Environmental Protection Agency under CWA § 319 to control and prevent nonpoint source pollution. The state matches these federal funds with a commitment to spend over two million dollars. Below is a breakdown of funds received and spent during the most recent federal fiscal years. This breakdown includes the expenditures of state and local match funds.

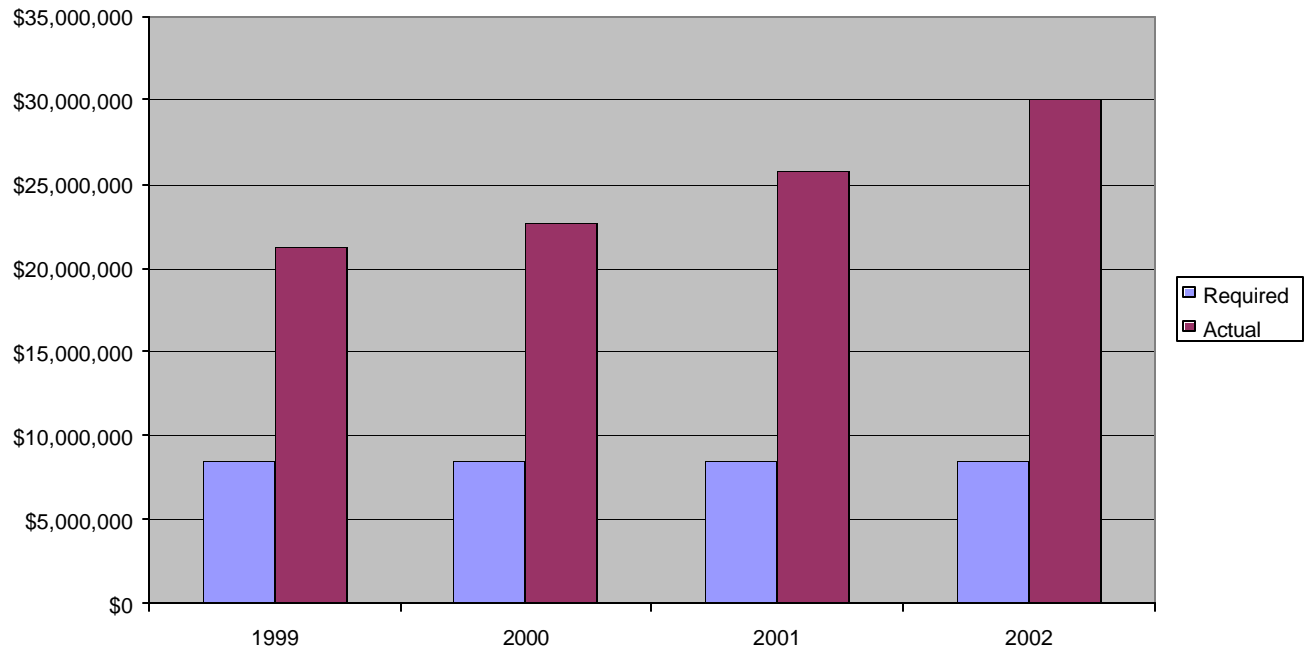
Federal Fiscal Year*	Federal Allocation	Federal Expenditure	Non-Federal Allocation	Non-Federal Expenditure	Total Allocation	Total Expenditure
1999	\$2,856,841	\$2,708,298	\$1,904,559	\$1,805,532	\$4,761,400	\$4,513,830
2000^	\$2,847,302	\$2,677,078	\$1,898,204	\$1,784,719	\$4,745,506	\$4,461,797
2001	\$3,091,600	\$2,010,890	\$2,061,066	\$1,340,594	\$5,152,666	\$3,351,784
2002^	\$3,140,001	\$706,281	\$2,093,334	\$470,854	\$5,233,335	\$1,177,135

**Note: The 2001 and 2002 federal grants remain open. It is expected that the State will spend allocated federal and state funds before grant close out.*

^Includes unexpended prior year balances

Section 319(h)(9) of the Clean Water Act requires any State that applies for § 319 grants to establish and maintain its aggregate annual level of State nonpoint source pollution control expenditures for improving water quality at the average level of such expenditures in FFY 1985 and 1986. This is referred to as the State's "Maintenance of Effort" (MOE) requirement. The goal of the MOE requirement is to insure that states allocate a minimum level of resources to control and prevent nonpoint source pollution. In addition this requirement prevents states from substituting federal resources for state resources. Maryland's MOE requirement is \$8,447,270. Maryland's Nonpoint Source Program documented state fiscal year (SFY) 2002 nonpoint source expenditures of over \$30 million in state funds to control and prevent nonpoint source pollution. Maryland continues to exceed its MOE requirements.

State of Maryland - Nonpoint Source Maintenance of Effort (MOE)



Appendix B

Maryland's Preliminary Chesapeake Bay Nutrient Caps

(Revised January 8, 2003)

Maryland's Preliminary Nutrient Caps

REVISED – January 8, 2003

Why were new nutrient caps for Maryland established?

The 2000 Chesapeake Bay Agreement between Maryland, Virginia, Pennsylvania, the District of Columbia, the Chesapeake Bay Commission, and the US EPA, calls for the Bay jurisdictions to remove the Bay and its tidal tributaries from the Clean Water Act's list of impaired waters by 2010. To achieve this goal the Bay jurisdictions must each develop detailed nutrient and sediment related water quality standards for their tidal portions of the Chesapeake Bay.

Bay Program partners, like Maryland, must set limits on nutrient and sediment loadings to achieve these new water quality standards. In other words, Maryland must establish the maximum amount of nitrogen and phosphorus that will be permitted to "load" into the Maryland portion of the Bay. These maximum amounts are sometimes referred to as "caps."

What are the new nutrient caps for Maryland?

Maryland's new nutrient caps were announced by Governor Parris N. Glendening on October 31, 2002 at the annual Chesapeake Bay Executive Council Meeting. These nutrient caps, which will be revised in April 2003 when the Chesapeake Bay Program announces its "Baywide" nutrient caps, are:

- Nitrogen discharges will be reduced to no more than 37.9 million pounds per year by 2010. This requires a reduction of 19 million pounds of nitrogen from the current 56.9 million pounds annually "loaded" into the Bay.
- Phosphorus discharges will be capped at 3.0 million pounds per year by 2010, a 700,000-pound annual reduction of phosphorus loadings.

How were the new statewide nutrient caps for Maryland established?

The new statewide nutrient caps are replacing the loading limits established as part of the 1987 Chesapeake Bay Agreement. These older caps were based on the 1987 Bay Agreement goal to achieve a 40 percent reduction of controllable nitrogen and phosphorus loads (from a 1985 base load) by the year 2000.

The new caps are based on a formula developed to insure equity and fairness across the watershed. They are based on data from the Chesapeake Bay Program's monitoring and water quality model to determine the nutrient levels needed to restore or maintain the dissolved oxygen levels in the main stem of Chesapeake Bay that will support the Bay's living resources in the five different areas of the estuary: 1) Shallow water; 2) Open water; 3) Deep water; 4) Deep channel, 5) Migratory fish spawning and nursery areas.

Calculating the caps first requires determining Maryland's share of the nitrogen and phosphorus loadings in to the five Bay Program tributary watershed basins in Maryland; then computing the number of pounds of nutrients that must be reduced. The results of these computations are Maryland's statewide nutrient loading caps.

Next, these statewide caps must be fairly allocated to each of Maryland's ten tributary basins. This allocation is determined by calculating the percent each of Maryland's ten Tributary basins contributes to the statewide anthropogenic (human generated) load. This percentage is then applied to the total Maryland reduction goal, thus equitably apportioning the reduction based on an individual basin's actual contribution.

Table 1. Tributary Strategy Basin Allocations
(In millions of pounds)

	Nitrogen			Phosphorus		
	1985	2000	2010 Goal	1985	2000	2010 Goal
Choptank	6.2	4.1	3.0	0.64	0.38	0.3
Lower Eastern Shore	9.5	6.7	5.0	1.1	0.53	0.48
Lower Potomac	3.4	2.9	1.6	0.32	0.18	0.16
Lower Western Shore	2.0	1.7	0.8	0.26	0.11	0.1
Middle Potomac	10.4	7.4	4.7	0.45	0.33	0.25
Patapsco/Back	22.4	11.1	9.8	1.39	0.59	0.53
Patuxent	5.0	4.1	2.1	0.51	0.27	0.21
Upper Eastern Shore	8.1	6.3	3.6	0.69	0.49	0.31
Upper Potomac	10.2	8.5	5.0	1.02	0.69	0.5
Upper Western Shore	5.3	4.3	2.5	0.4	0.26	0.2
Maryland	82.4	56.9	37.9	6.77	3.83	3.02

Why use this approach to calculate loads?

There are four reasons to use this system, rather than one of the several other methods considered:

1. This approach applies only to the anthropogenic (human generated) load in each basin, not to the loads generated by natural conditions (forests and wetlands). It therefore makes allowance for the differences in Maryland's tributary basins. (Basins with significant areas of wetlands, such as the Lower Eastern Shore, will need lower than average reductions. Basins with

less forest or wetland-type “background” loadings, like the more urban Lower Western Shore, Patapsco, and Patuxent, will need higher than average reductions to reflect their higher than average anthropogenic loads.)

2. These calculations give credit to nutrient reduction efforts undertaken since the beginning of the Chesapeake Bay Program cleanup (which uses 1985 as a base year). Therefore investments already made and the nutrient reductions already realized are recognized. Basins like the Patapsco/Back River, which has made significant gains in point source controls since 1985 are, therefore, not penalized.
3. The method is equitable – requiring basins to reduce their loads based on the amount of nutrients generated by human activities in their basin.
4. The method minimizes bias between nutrient loads sectors (e.g., point sources, urban, and agriculture).

Will the percentage reductions vary from Maryland Tributary Basin to Tributary Basin?

Yes. The percentage reductions will vary across basins (see Table 2). The 1987 Agreement set a flat 40 percent reduction across the entire Bay. What is being done now recognizes the differences between tributary basins and strives for more equity in determining who does what:

- o Different basins, with different anthropogenic loads, obviously will require different percentages of reductions
- o Different basins have made different rates of progress since the cleanup started in 1983, and they should be recognized) for what they have already accomplished.

Three basins (Lower Eastern Shore, Patapsco/Back River, and Lower Western Shore) that have already exceeded or are within 10% of achieving their preliminary phosphorus will be assigned a 10% reduction in 2000 phosphorus loads.

Load estimates and percentage reductions are based on reported implementation progress (as of 2000) and current estimates of the effectiveness of best management practices, and could change as this information is improved.

Will the new (preliminary) nutrient caps change?

The Chesapeake Bay Program is working to set nutrient caps for the entire basin. They expect to complete their work and have Baywide caps and reduction goals by April 2003. These load caps will be the ones needed to meet the three water quality criteria: dissolved oxygen, chlorophyll a, and water clarity.

Maryland chose to accelerate the Bay Program pace (which is running about 18 months behind schedule) and set preliminary goals based only on dissolved oxygen for nitrogen and phosphorus in October 2002, because there was strong science to support such a decision. This action was taken to provide additional time to substantively involve the Tributary Teams and other stakeholders in developing Tributary Strategies to achieve the caps. These preliminary caps will be revised (they are expected to become more stringent) when additional information on the nutrient loads needed to achieve chlorophyll and clarity criteria becomes available in April. Additional nutrient control efforts may also be needed within some basins to address local water quality problems requiring Total Maximum Daily Loads (TMDL's).

Table 2. Percentage Reductions to Meet Preliminary Goals

	Nitrogen		Phosphorus	
	Reduction from 1985 Load	Reduction from 2000 Loads	Reduction from 1985 Load	Reduction from 2000 Loads
Choptank	52%	29%	54%	23%
Lower Eastern Shore	47%	25%	48%	10%
Lower Potomac	52%	44%	51%	14%
Lower Western Shore	59%	51%	55%	10%
Middle Potomac	55%	37%	45%	23%
Patapsco/Back	56%	12%	60%	10%
Patuxent	58%	49%	60%	24%
Upper Eastern Shore	55%	42%	56%	37%
Upper Potomac	52%	42%	51%	28%
Upper Western Shore	54%	43%	49%	24%
Maryland	54%	33%	53%	21%

How will the nutrient caps be achieved?

Maryland's ten Tributary Teams—watershed based Teams of stakeholders in each of the ten major tributaries to the Bay—are working closely with State Agencies through the Maryland Tributary Strategies Development Workgroup. This workgroup is responsible for working with individual tributary teams to develop draft strategies, solicit public feedback, and ensure that final strategies are workable, cost effective, and fair. The Tributary Strategies will include implementation targets for "best management practices" that reduce nutrient pollution from every source, including agriculture, developed land, point sources, and resource lands. The Strategies will be completed by December 2003, and will address implementation and funding.

Appendix C

Chesapeake Bay Tributary BMP Tracking Totals

Statewide Totals, 1993 to 2000

Statewide Totals, 1993 to 2000

Implementation Tracking

Wastewater Treatment Plants	Units	SFY 1993	SFY 1994	SFY 1995	SFY 1996	SFY 1997	SFY 1998	SFY 1999	SFY 2000	Total Implemented	2000 Target***	2000 Goal Met
BNR [in Operation/Construction]	plants									39	47	No
Urban												
Erosion and Sediment Control**	ac	0	9,643	9,872	9,176	6,621	7,966	0	10,450	10,450	19,272	No
Enhanced Stormwater Management	ac	0	5,684	1,954	9,640	1,805	1,032	0	8,047	28,162	134,902	No
Stormwater Management Retrofits	ac	0	582	529	1,592	398	335	0	1,375	4,811	7,553	No
Stormwater Management Conversion	ac	0	832	1,056	295	149	78	0	964	3,374	3,426	No
Septic Pumping	systems	0	0	0	0	0	0	0	0	0	3,269	No
Septic Denitrification	systems	0	72	52	51	48	0	0	89	312	101	Yes
Septic Connection	systems	0	1,979	3,047	1,216	865	735	0	3,039	10,881	5,946	Yes
Urban Nutrient Management	ac	0	0	0	0	0	0	0	0	0	49,818	No
Agriculture												
Soil Conservation Water Quality Plan	ac	73,306	171,520	63,814	85,366	108,410	74,007	78,536	92,500	747,459	654,888	Yes
Conservation Tillage**	ac	91,583	87,063	15,001	28,736	12,930	34,320	0	-21248*	248,385	339,805	No
Retirement Highly Erodible Land	ac	478	197	140	105	475	162	144	100	1,801	5,941	No
Animal Waste Mgmt System L	systems	26	37	40	24	30	28	28	27	240	637	No
Animal Waste Mgmt System P	systems	32	87	83	65	71	45	60	43	486	392	Yes
Runoff Control	systems	12	25	38	18	34	23	35	33	218	566	No
Stream Protection With Fencing	ac	176	178	323	30	758	834	1,739	3,837	7,875	2,668	Yes
Stream Protection Without Fencing	ac	101	157	207	162	236	328	307	316	1,814	6,656	No
Nutrient Mgmt Plan Implementation	ac	105,289	194,835	216,015	95,415	105,667	110,561	107,217	95,572	1,030,571	866,902	Yes
Cover Crops**	ac	20,111	19,931	10,032	18,370	0	97,611	48,379	159,773	159,773	167,198	No
Resource												
Buffers - Forested	ac	0	176	193	253	322	1,122	1,730	1,678	5,474	3,204	Yes
Buffers - Grassed	ac	7	5	4	255	129	60	898	1,350	2,708	4,173	No
Forest Conservation	ac	907	2,687	7,483	6,034	6,276	5,770	4,140	5,468	38,765	18,334	Yes
Tree Planting	ac	247	1,153	1,035	1,046	1,110	1,754	1,985	386	8,716	10,290	No
Forest Harvest Practices	ac	0	0	0	0	0	0	0	0	0	19,530	No
SEC - Structural	linear ft	7,161	3,451	1,528	5,209	7,617	8,871	8,100	0	41,937	61,070	No
SEC - NonStructural	linear ft	11,715	8,610	10,467	6,329	9,997	6,820	7,959	14,808	76,705	58,598	Yes
Marine Pumpouts	marinas	0	16	16	39	54	23	18	4	170	158	Yes

* Implementation data reported biennially starting in 1998; negative value represents loss of new acres put into practice.

** Data for these practices represent total implementation in a given year, implementation is not cumulative and nutrient reductions are based on most recent year of implementation.

*** Reference: Tributary Annual Report 1996-1997 (April 1998)

NOTES 1) Implementation data reported by state fiscal year (i.e., SFY1994=July1,1993-June 30,1994).

2) Most implementation data based on state programs, funding and/or requirements.

Appendix D: Maryland's 2002 Outreach Strategy

Planning and strategizing underpin any successful education and outreach effort. In 2002, the NPS program developed an objective-oriented outreach strategy to guide and steer its outreach efforts to increase the program's visibility, local government participation in NPS planning and implementation, and public awareness and participation in watershed planning. The strategy builds on and incorporates objectives identified in the NPS Management plan and the FFY02 NPS work plan through a dual focus on grant outreach and NPS pollution mitigation outreach. The strategy aims to target program outreach efforts to where it pays most by setting the following goals:

- 1. Increase participation in NPS planning and implementation by local governments.**
- 2. Increase public awareness and participation in watershed planning and projects.**
- 3. Increase program visibility with legislative (state, federal) and funding agencies.**

Goal 1: Increase Participation in NPS Planning and Implementation by Local Governments

Increase the number and quality of grant applications

The newly designed NPS website was extensively used during this period to announce and make Requests For Proposals (RFPs) available to the widest possible audience. This facilitated the ability of local governments and other interested organization to obtain these documents directly from the website. Posted RFPs included those for the WRAS, NPS incremental and the Onsite Sewage Disposal Systems (OSDS) grants. In addition to extensively using the web to download the RFPs, local governments, Soil Conservation Districts, and local government Tributary Team representatives received hard copies of the RFPs.

In order to help the local governments submit robust 2003 Watershed Restoration Action Strategy (WRAS) proposals with clearly articulated water quality and natural resource-based management goals and to help them better understand the services that DNR provides during the Watershed Restoration Action Strategy partnership, DNR organized three WRAS RFP Workshops between June and July. Eleven local government representatives, one watershed organization, and three consulting firms attended the WRAS RFP Workshops. The agenda focused on three major areas: 1) what DNR, EPA, and NOAA require or encourage in a watershed plan; 2) the services that DNR provides during the WRAS partnership; and, 3) the concerns and or questions posed by the local governments. Participants found the workshops valuable, particularly the presentations and details regarding DNR's services.

Participation in National and Regional Outreach Workgroups

Participation in the Chesapeake Bay Tributary Strategies "Education and Behavior Change Workgroup" and the States/EPA NPS Partnership Outreach workgroup helped the NPS program tie its outreach efforts into other DNR efforts. In addition it increased

awareness within the Tributary Strategies Program of other national efforts, as well as tied into the National Media Toolbox effort. The most evident outcome of this participation has been its influence in the NPS program outreach plan, which incorporates and strives to expand on the objectives underpinning the efforts of these other workgroups.

Goal 2: Increase Public Watershed Awareness and Participation in Watershed Planning and Projects.

Develop and distribute fact sheets and other project information to the public

A number of fact sheets on the program were developed, including success stories, project summaries, tours and site visits, etc. Though the website has played a pivotal role in having this information available to the public, print copies of these documents have been used to educate the legislature, the transition team of the new state and DNR administration, and the general public through displays at the Tributary Strategy annual meeting.

Maryland is currently represented in the national States/EPA Outreach Workgroup. This workgroup is in the process of developing a media toolbox for use by local watershed groups to increase awareness of NPS pollution issues, though the ultimate goal is bringing about behavior change. In addition to providing input to this group, the NPS program has not only put in place a strategy for sharing and distributing the toolbox to local groups, but expects to play a pivotal role in providing support on the use of these resources.

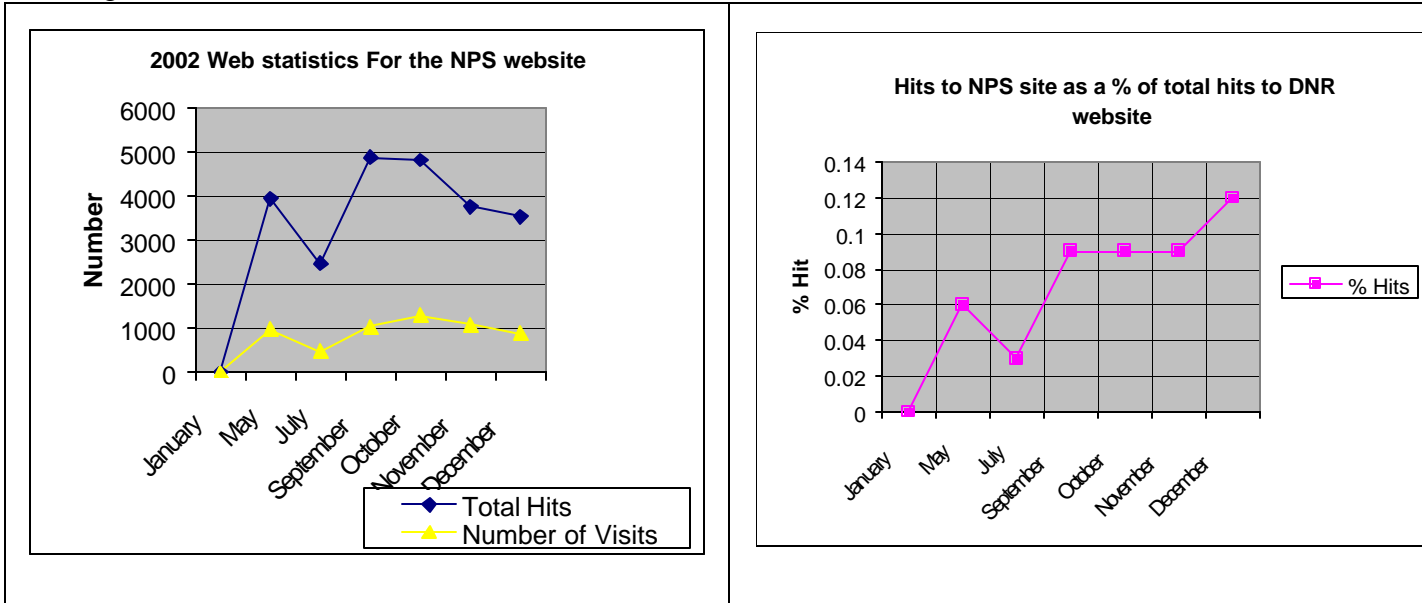
Goal 3: Increase Program Visibility with Legislative (State, Federal) and Funding Agencies

Through a combination of strategies ranging from a newly designed website, organized tours, site visits and ribbon cutting ceremonies, the NPS program sought to increase its visibility within DNR, the state of Maryland and nationally. All these efforts sought to raise awareness of NPS issues, highlight challenges and successes faced by the program, as well as give lawmakers and policy makers an opportunity to see first hand, on-the-ground implementation projects.

Website redesign and update

A newly designed NPS website was launched in September 2002. (See <http://www.dnr.state.md.us/bay/czm/nps>) In addition to serving as a repository of information on the NPS program, this site meets objectives laid out in the NPS outreach strategy. This content rich website clearly outlines Maryland's nonpoint source pollution prevention programs, provides up-to-date information on the status of 319 funded projects, including project summaries, and provides a success story content area that highlights exemplary projects funded with 319 funds.

Figure 1: Web statistics for the NPS website



1.a

1.b

The above statistics are provided by the Web Trend Log Analyzer: which delivers web traffic reporting and activity information for the DNR website. Log Analyzer produces essential reports on web site visitor patterns, referring sites, visitor paths, demographics and much *more*.

% of Total Hits - Percentage of hits to the specified directory out of hits to all directories.

Visits - Number of visits to pages within the specified directory. If a visitor is idle longer than the idle-time limit, WebTrends assumes the visit was voluntarily terminated. If the visitor continues to browse your site after they reach the idle-time limit, a new visit is counted. The default idle-time limit is thirty minutes.

To appreciate this website's importance in increasing program visibility, Figure 1a and Figure 1b summarize web traffic from January through December 2002. These graphs clearly indicate an increase in web activity with the largest leap occurring in September right after the launch of the new site. Though we are unable to track the origin of these visits, the overall indication is an increase in web activity, which is a sure sign of increased interest in the activities of the program. Moreover the program continues to receive acknowledgments about the website from visitors and users including students, and other states and federal representatives.

As part of the design, project tours and site visits were added to the website. The following highlights these tours and visits and include web-links for further information.

Site Tours and Field Visits

A. Federal Officials Project Tour (September 2002).

www.dnr.states/publications/federal_tour02.pdf



EPA and OMB officials listen to Larry Lubbers' and Ken Yetman's (DNR/Watershed Restoration Division) field presentation about the Sawmill Creek project.

In September 2002, officials from the United States Environmental Protection Agency Linda Fisher (EPA Deputy Administrator), Robert Wayland (EPA, Office of Wetlands and Watersheds Director) Dov Weitman (EPA, Nonpoint Source Control Branch Chief), Stacie Craddock (EPA Nonpoint Source Program) and the United States Office of Management and Budget (Marcus Peacock and Kimberly Miller) were taken on a tour of the Sawmill Creek project. The federal officials were interested in seeing local on-the-ground state projects that highlight the strengths and capabilities of the 319 program to leverage various private and public partnerships and accomplish environmental results.



Linda Fisher, EPA Deputy Administrator, prepares to return fish into Sawmill's Tributary 9. Behind her (from left) are Dov Weitman, Nonpoint Source Branch Chief; Kimberly Miller, OMB; and Robert Wayland, then-Director, Office of Wetlands, Oceans and Watersheds.

B. EPA Site Visit, October 2002:

http://www.dnr.state.md.us/bay/czm/nps/publications/EPA_site_visit.pdf

In October 2002, the Nonpoint Source Management (NPS) program organized a two-day tour of Maryland NPS projects for United States Environmental Protection Agency (EPA) regional and headquarters personnel. This tour was designed to give the visitors an opportunity to acquaint themselves with the program and to provide insights on a variety

of Maryland's NPS issues (planning, implementation, etc.) in both rural and urban watersheds.

EPA officials involved in this tour were Fred Suffian, Peter Weber, Tom Ivori, Romell Nandi and Stacie Craddock. The tour gave EPA officials an opportunity to see first hand on-the-ground implementation projects (in both rural and urban watersheds), meet and network with state NPS staff and project managers and become acquainted with local implementation issues and concerns. Projects visited during this tour include; Town of University Park stream restoration project, Presidential Heights Low Impact Development Project, Upper Pocomoke Agricultural BMP Evaluation Project, several stream restoration projects, low impact development projects, and Worcester County wetland projects.

- **Town of University Park Stream Restoration Project:**

The Town of University Park Stream revitalization project successfully restored 3,500 linear feet of stream that suffered from bank erosion, silting, degraded habitat and an almost complete lack of riparian forest buffers. This project highlights how effective stream revitalization and habitat rehabilitation work can be accomplished in a highly urbanized environment.



Before Stream Restoration



Immediately After Stream Restoration

- **Low Impact Development Tour:**

This tour sought to portray the practice of Low Impact Development (LID) as implemented within Prince Georges County. Five projects demonstrating this technique were visited. The Presidential Heights LID project, partly funded with 319 dollars, seeks to demonstrate: 1.) the effectiveness of the LID concepts in maintaining post-development stormwater quantity and quality near predevelopment conditions and 2.) the effectiveness of LID concepts for retrofitting residential communities, thereby providing opportunities for restoring watershed quality. Results from physical, chemical and biological monitoring lend additional technical support to the effectiveness of the LID concepts.



With LID, the absence of traditional street curbs and other stormwater conveyances allow for “sheet flow” which can result in better absorption during rains as opposed to traditional streets with stormwater channeling, which can contribute to erosion.



“Rain Gardens” are bioretention facilities present on each lot to allow for rainwater to be captured and treated. Residents assert that the presence of rain gardens adds value to their property because trees, shrubs and other vegetation within such areas have an aesthetic value.

- **Upper Pocomoke Agricultural BMP Evaluation Project**

The goal of this paired watershed study is to demonstrate the positive effects of nutrient management and poultry litter management on water quality. The study design involves a control watershed and a treatment watershed where treatment consists of complete poultry litter removal and replacement with inorganic fertilizer, in compliance with nutrient management plans, and cover crops on all available acres. The treatment period began in 1998. Nutrient budgets developed from the start of treatment in 1998 up to 2001 indicate that nutrient surplus in the control watershed has remained constant while nutrient surpluses in the treatment watershed have decreased approximately 92% for nitrogen and approximately 98% for phosphorous.

- **Worcester County Wetland Site Tour**

The Worcester County Soil Conservation District, in cooperation with the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Maryland Department of Natural Resources and local landowners, completed the restoration of over one hundred acres of wetlands and associated buffers in the Pocomoke and St. Martin’s River watersheds. The District used Nonpoint Source Program and Transportation Equity Act 21st Century (TEA-21) funds administered by DNR’s Watershed Restoration Division to create forested wetlands on a variety of locations capable of supporting a wide range of reptiles, amphibians, migratory waterfowl and other fauna associated with wetlands and wetland habitats. Such wetland restoration projects will have strong local impact on reducing nutrients and improving wildlife habitats within Pocomoke and St. Martin river watersheds.



C. Georges Creek Watershed Tour

http://www.dnr.state.md.us/bay/czm/nps/publications/georges_creek.html

During the summer of 2002, Allegany County officials, in cooperation with the Allegany Soil Conservation District and the Georges Creek Watershed Association, conducted a watershed tour for citizens, local elected officials, US Congressional staff, and state and federal agency representatives. The Georges Creek watershed tour highlighted the community effort that is necessary for watershed restoration. As Allegany County and its citizens and partners continue to implement the Georges Creek restoration strategy, their long-term vision of a restored Georges Creek will become a reality.

Highlighted projects included the Mill Run project, which employed an unique AMD treatment system developed by the Freshwater Institute and the USGS Biological Resources Division, and the Neff Run Phase I, and the Lonaconing Island Park projects described below:

- **Neff Run Phase 1 Project**

The Neff Run Phase I project, partially funded by the nonpoint source program, stabilized severe stream instability problems in the middle and upper reaches of Neff Run. Nearly 4,000 linear feet of stream was stabilized through the installation of rock cross vanes, and the planting of riparian buffers. This project incorporated outreach into its activities resulting in the organization of a WATER Day (Watershed Activity To Encourage Restoration) for local elementary school students during which the students learned about the importance of stream corridor protection and were given the opportunity to help establish riparian buffers. The project also utilized volunteers from the Georges Creek Watershed Association, Nemacolin Chapter of Trout Unlimited, Boy Scouts Troop 9, New Dominion School and Maple Run Youth Center to participate in buffer planting activities.

- **Lonaconing Island Project**

The Lonaconing streamside project area was severely damaged during two major flooding events in 1996. In 1997, Allegany County acquired four residential properties that were damaged by the 1996 flood. The county then stabilized the stream, streambanks and adjacent floodplain, and designed and constructed a wetland area and community greenway park. The greenway park is approximately three acres in size and has a small walking trail. Allegany County is in the process of deeding the greenway parkland over to the Town of Lonaconing. DNR's Program Open Space funds have been secured for additional park features (e.g. benches, picnic tables and interpretive signage). The completed project serves as an example of how a comprehensive planning project may simultaneously addresses flood mitigation and water quality issues, while providing additional benefits to local residents.

D. Town of University Park Ribbon Cutting Ceremony:

http://www.dnr.state.md.us/bay/czm/nps/publications/town_uni_park.html

On Thursday, April 11, 2002, The Honorable John L. Brunner (Mayor, Town of University Park) presided over the ribbon cutting ceremony for the University Park Stream enhancement project. This ceremony was attended by representatives of the various partner organizations involved in the realization of this project. University Park Elementary School, located adjacent to this project, was represented by the school's principal and student leaders. The project showcases the effectiveness of local government/state and business partnership in achieving stream restoration and environmental education goals.



Heading the DNR delegation to the ceremony was Karen White (center-left) DNR's then-Deputy Secretary, while Prince George's County Department of Environmental Resources was represented by its Deputy Director, W. Lee Jones (second from left). Mayor Brunner stands to his left.

Appendix E: Matrix of Progress on Nonpoint Source Management Plan Milestones

Category	Priority	Implementation Time–line (Years)		
		1998 – 2002 Goals and Status	2003 – 2007 Goals & Status	2008 – 2012 Goals & Status
Agriculture	Statewide	<p>\$ \$ \$ \$ \$ \$ \$ \$</p> <p>PFarmers using commercial fertilizers must have N & P based plans by 2002.</p> <p>PFarmers using animal manure or sludge must have N based plans by 2002.</p> <p>2002 status: 75% of farmers covering 88% of Maryland’s agricultural land are in compliance. Compliance includes 523,947 acres granted a ‘justification of delay’, working to complete plans.</p>	<p>\$ \$ \$ \$</p> <p>PSoil Conservation Water Quality Plans (SCWQP) on 50% of all farms by 2003</p> <p>PSCWQP implemented on 25% of all farms by 2003</p> <p>PFarmers using animal manure or sludge must have N and P based plans by July 1, 2004</p>	<p>\$ \$ \$ \$</p>
	Watershed Focus	<p>P 2002 status: Chesapeake Bay Tributary Strategies: Maryland’s new preliminary basin nutrient caps were announced on 10/31/02 and revised 01/08/03. See http://www.dnr.state.md.us/bay/tribstrat/tsdw/index.html for more information.</p> <p>PAgricultural Priority Watersheds**</p> <p>Cover crops are the focus for erosion control/ nutrient loading reductions on the Eastern Shore--90,000 acres planted. An additional 9,300 acres were planted in 3 priority watersheds – the Antietam, Catoctin Creek, and Monocacy.</p>	<p>PAgricultural Priority Watersheds as of 3/03.</p> <p>**Other priority I watersheds include Double Pipe Creek, Upper and Lower Choptank, Tuckahoe, Marshy Hope, Nassawango, Sassafras, Upper Pocomoke, Upper Chester, Wye and Conococheague.</p>	<p>P Specific Areas To be Determined</p>

Forestry	Statewide	\$ \$ \$ \$ \$ \$ \$ \$ PRiparian Forest Buffer (RFB) goal of 43 miles per year <u>2002 Status:</u> 273 miles of riparian forest buffers were established in 2002. The cumulative total (since 1996) is 869 miles.	\$ \$ \$ \$ \$ PRFB goal of 43 miles per year	\$ \$ \$ \$ \$ P600 miles of created RFB by 2010
	Watershed Focus	<u>P 2002 Status:</u> Maryland's Atlantic Coastal Bays are now protected under the Critical Areas buffer regulations. Chapter 433 (HB 301) of 2002 was signed into law on May 16, 2002. Previously, Critical Areas jurisdiction applied only in the Chesapeake Bay and 1000 feet landward of Bay tidal coastline areas. P Special Rivers Project (Monocacy, Anacostia, Susquehanna, and Town Creek). <u>2002 Status:</u> The final Report for the 2/1/02 – 9/30/02 grant period states that the 1,541 acres of buffers installed equals triple the goal. The 71 Forest Stewardship Plans exceeded the goal by 25%. The Town Creek Long-term Ecosystem Management Plan was completed this year as well. P Rock & Carroll Creek Project: complete.	P Specific Areas To be Determined	P Specific Areas To be Determined
Urban runoff: developing + developed areas	Statewide	\$ \$ \$ \$ \$ \$ Many aspects of this category will be addressed through NPDES Phase II stormwater permits	\$ \$ \$ \$ \$	\$ \$ \$ \$ \$
	Watershed Focus	<u>P 2002 Status:</u> Washington - Baltimore Metropolitan Areas: Roland Run, Redhouse Run, and the Severn River Stormwater Management plan projects completed. P Anacostia Watershed (See below).	P Specific Areas To be Determined	P Specific Areas To be Determined

Marinas and recreational boating	Statewide	\$ \$ \$ \$ \$ \$ \$ \$ P 96 certified clean marinas by 2002 2002 Status: 54 Certified Clean Marinas, 11 Clean Marina Partners, and 98 pledges. 405 sewage pumpout facilities have been installed in 350 marinas. Two “no discharge zones” for boats were established in 2002.	\$ \$ \$ \$ \$ P 125 certified clean marinas by 2004	\$ P 270 certified clean marinas by 2010 P Marine Sewage Pumpout Program goal of 460 facilities by 2010.
	Watershed Focus	2002 Status: P Chesapeake Bay P Coastal Bays P Deep Creek Lake	\$ \$ \$ \$ \$ Focus will be on the Coastal Bays, Chester, Sassafras, and Stillpond/Fairlee Creek areas	\$ \$ \$ \$ \$
Channelization and channel modification, dams, and streambank and shoreline erosion	Statewide	2002 Status: A partnership is underway with 2 counties to pilot the Shore Erosion Task Force recommendation to develop a tool that targets the placement of appropriate shoreline response efforts (from structural to land management).	\$ \$ \$ \$	\$ \$ \$ \$ \$
	Watershed Focus	2002 Status; P Chesapeake Bay Shoreline P WRAS watersheds P Anacostia, Northwest Branch and the Town Park Stream - Restoration projects are complete.	\$ \$ \$ \$	\$ \$ \$ \$
Wetlands	Statewide	\$ \$ \$ \$ \$ \$ \$ \$ P 3,000 acres by 2002 2002 Status: Cumulative total = 12,000 acres of wetland creation, restoration, and enhancement	\$ \$ \$ \$ \$ P 10,500 acres by 2007	\$ \$ \$ \$ \$ P 15,000 acres by 2010
	Watershed Focus	2002 Status: P WRAS watersheds P Coastal Bays & Chesapeake Bay commitment	P Specific Areas To be Determined	P Specific Areas To be Determined

